Development work for wave 2 of the Food and You survey.

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Unit Report 16

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Executive Summary

Background

Food remains a public policy priority, with ongoing concern with a range of issues including; obesity, salt, sugar and fat intakes , food safety, security and sustainability. A key strategy of the Food Standards Agency is to promote 'safe food and healthy eating for all'. To improve understanding of the attitudes and practices of individuals in relation to these themes the need was identified for a major new survey, which will help measure progress towards some of the FSA's strategic objectives[1]. The first wave of the survey was conducted in 2010. A second wave of the survey is expected to include questionnaire items within two new broad topic areas:

- Influences on food choice
- Perceptions of risk associated with food safety and diet

This study was therefore designed to identify which issues can be addressed effectively by means of survey data and the best approaches to use given the potential complexity of some aspects of food choice and perceptions of risk.

Methods

In order to meet the aims and objectives of the study, a four stage methodology was used, including; a literature review, key informant interviews, exploratory focus group interviews and the design of 2 modules for the second wave of the Food and You survey.

The literature search took a 'scoping review' approach and set out to explore not only substantive findings but also the methodological approaches used to explore the issues of interest.

The informant interviews were conducted with experts in the field of health and nutrition to gather their views on gaps in the literature and key methodological issues.

Four focus groups were conducted in urban and rural areas with a broad range of respondents in terms of age, ethnicity, gender and socio-economic class.

[1] Due to machinery of government changes, resulting in the transfer of nutrition policy from the FSA to the Department of Health and the FSA's renewed focus on food safety (as of 1st October 2010), the FSA Strategic Plan is currently under review.

Drawing on this evidence base, combined with a review of questions in previous surveys which have examined food and eating related issues, a new set of questions were developed for the Food and You survey wave 2.

Findings

The literature review and focus groups were used to shed light on the key influences on food choices, triggers for change in behaviour and obstacles to dietary change. Also of interest was whether individuals regard some eating practices as risky and how they respond to those perceived risks, for example by means of trade-offs. Food safety was also a focus – how knowledgeable are consumers and to what extent do they adhere to safe practices in terms of cooking, storing and preparing food. A final issue of interest are the expectations of individuals in relation to the role of government and health promotion campaigns.

Food choices

The literature review highlighted the extent to which human food choice is a complex phenomenon, hard to predict and manipulate, and consequently a challenge to measure and analyse. A large range of factors influence our food choices and these range from biological, psychological, affective and economic through to social and cultural influences that all operate on different aspects of food choice and vary in terms of their relative strength and influence from person to person and context to context.

Given the context dependence of food choices, the main concern in developing the survey instruments was that individuals would need to be asked about what influences their choices in such a wide variety of circumstances that the questionnaire would become prohibitively long. A further challenge in assessing food related choices is the habitual non-reflexive nature of eating practices and hence the low salience of food choice. The focus groups, however, revealed that individuals were quite comfortable discussing the broad influences on their choices in a generalised way. Perspectives adopted considered eating behaviour over several days or weeks and many individuals therefore perceived themselves as achieving a healthy balance over the longer term. Less healthy foods were deemed acceptable ‘in moderation’ or if ‘offset’ by physical activity. Individuals did acknowledge that much of their behaviour was habitual, but were clear also of the range of factors that were taken into account at each mealtime, including; cost, convenience, health, ethical concerns and, above all, taste. How individuals prioritised these different influences and the trade-offs they made, were then context dependent.

Family members are a key influence on food choices and as family structures alter over the life time so do eating habits. Associations between age and consumption behaviour therefore have both a cohort and ageing dimension. A range of studies have highlighted patterns of food choice and fruit and vegetable consumption associated with socio-economic status, age, gender, education and ethnicity.

Constraints on healthy eating

Significant constraints on eating more healthily include cost - dietary surveys, such as NDNS and LIDNS, show a clear patterning of food and nutrient intakes by socio-economic status and in LIDNS price/value/money was cited as one of the most important influences on food choice. Higher income or lower price of healthier foods was also given by both men and women as the main factor that would facilitate change to a healthier diet. On the other hand, increasing affluence is also associated with eating out more which need not entail healthy choices and indeed during the focus groups some participants suggested that if they won the lottery and cost was no longer an issue, the consequences would not be good in terms of health as they would eat out more, in more expensive restaurants, and eat much richer food.

The lack of availability of healthy food options is also an important factor, particularly for those with non-regular working hours or for those who rely on institutional canteens for meals.

In both the literature review and the focus groups, food choice emerged as a site of psychological tension for some individuals, where resisting some foods is equated with a ‘battle’. Food choices cannot be understood purely in terms of cognition and rational decision making processes, as emotional and affective systems, which do not consider longer term consequences, are also critical determinants. ‘Pigging out’ with a DVD and chocolates is perceived as a pleasurable experience. Furthermore, as noted by Ruhm (2010), the profit motive is a potentially important reason for rising obesity with food producers engineering products ‘to stimulate the affective system so as to encourage overeating’. Below average profit margins of 3 to 6 per cent are associated with healthy non-processed foods, compared with margins of 15 per cent associated with highly processed, less healthy foods (Lawrence, 2010). These powerful external incentives, including products and their advertisement, should not be underestimated.

Perceptions of risk

Potential food related risks have a time dimension. Food can have an immediate impact on health due to improper cooking, hygiene or storage, while other risks have a cumulative effect, arising from poorly balanced nutritional choices with longer term consequences on health. A further set of risks are beyond the control of consumers, apart from at the point of purchase, these include food additives, pesticides and other contaminants, which may have an adverse effect on health. Considerable debate has also surrounded Genetically Modified (GM) foods, with concerns over the impact of genetic modification on the long-term health of both individuals and the environment. While consumer concern over food safety has steadily increased since the 1970s, in general food is still thought of in positive terms, associated primarily with taste or pleasure.

Of particular interest for many studies is the ‘gap’ between supposedly objective, measurable risk and individual perceptions of risk. In psychometric approaches perceptions are explained as a function of risk attributes. In summary, the following dimensions of risk have been identified as critical in explaining how hazards are rated or ranked and why a ‘gap’ in perceived compared with ‘objective’ risk is likely to persist; the extent of individual control over a risk, optimistic bias (‘it won’t happen to me’), dread related to the severity of consequences associated with a risk, natural vs manmade risks (people tend to worry more about mobile phone masts than the sun) and values / ideology (eg if an individual approves of nuclear technology as a solution to national power needs, this will be perceived as less of a risk). Nevertheless, during focus group discussions, individuals were asked to list everything that comes to mind when they consider the term ‘food risks’ and for each of the groups food poisoning was one of the first risks to be recalled and emphasised – consistent with an objective ranking of risk.

Key challenges in addressing issues of risk in a survey context relate to the potential overestimation of the salience of the risk perspective within broader processes of choice. By asking individuals whether they consider particular aspects of food as risky generates a focus on issues that might otherwise be absent from day-to-day eating decisions.

A second challenge relates to determining food safety in the home (preparation, contamination, storage etc). Such practices are hard to assess by means of surveys as there is a large gap between self-reported behaviour and observed behaviour in the home. To some extent this reflects social desirability bias – respondents are often reluctant to admit to behaviour or attitudes they feel may be judged as wrong or foolhardy. An alternative approach used in some studies is to assess knowledge among the general public. Knowledge does not equate directly with good practice however. The survey based findings will consequently need to be treated with caution in this area.

Health campaigns

The literature review identified fairly widespread trust in the government and other agencies in relation to food safety and providing information about food-related risks.

The focus groups highlighted gaps in knowledge and scepticism in relation to some health messages. Humorous food poisoning adverts were well received regardless of age, gender or background. Health campaigns relating to salt and fat, by contrast, evoked a more negative response - focus group participants expressed concern that while they advertised the dangers well, they did little to help people change their behaviour and failed to adequately instruct or advise on how diets might be improved. This is a difficult area as some people say they want more guidance, others less `nannying' and it is difficult to establish whether those who ask for more advice would, in practice, take it up. There remains considerable scope therefore to improve some health campaigns. Consumers were also sceptical about food safety recommendations such as ‘use by’ and ‘use within’ dates with few respondents abiding by these guidelines.

Some experts and many of the focus group participants felt that the government has an important role to play in relation to food safety and longer term food risks. The view most commonly expressed was that government should go much further than hitherto, with a need for bolder interventions, such as changes in school meals, changes in planning, controlled licensing of food outlets in high streets and tighter regulation of food content.

Methodological considerations

Individuals are influenced by a wide array of psychological, cognitive, affective, social, institutional, economic and cultural factors, many of which may not be stable and which will also be context dependent. Given this complexity and the fact that many influences on behaviour are habitual, non-reflexive and of low salience, the scope for surveys to explore food related attitudes, perceptions and behaviours is circumscribed. Surveys continue to shed light on important aspects of behaviour but it must be acknowledged that they are unlikely to reflect the full complexity of the attitude/ behaviour interface and may be prone to errors of measurement. A number of particular problems arise in designing questions for surveys about food choice and food risk. Consideration must therefore be given to the following issues, which may have implications for either methodological approach, question wording, question preambles or question layout/approach;

- Conditioning
- Social desirability bias
- Measurement of low salience behaviours
- Link between reported and actual behaviours
- Telescoping
- Response bias
- Knowledge questions
- Question location, order effects

Interviews with experts indicated that there is a role for surveys but that different research methods should be combined. Experts suggested that eating patterns were best investigated by means of “observational” or “ethnographic” approaches in order to get behind non-reflexive behaviours and understand how attitudes, motivations and behaviour interact in highly context-dependant circumstances.

1. Introduction

Food remains in the spotlight of public policy debate, with obesity, children's school meals, industrial and agricultural practices, pesticides and GM foods remaining high on the political agenda. Awareness of the links between food choices, exercise and a range of diseases such as cancer, diabetes and heart disease has become increasingly widespread, yet large proportions of the population still do not engage in health-promoting behaviours (Payne et al, 2004). There remains a need, therefore, to further develop understanding of the various factors which explain why some people exercise and eat healthily while others fail to do so.

New concerns have arisen and behaviour has been changing among some groups of consumer as an 'ethical' agenda has gained ground. Sales of ethical products have experienced rapid growth over recent years as some shoppers increasingly use their purchasing power to 'make a difference', by means of organic, fairtrade, environmentally friendly, and animal welfare assured products. (IGD, 2008[2]).

In 2007, FSA adopted the phrase 'Safe Food and Healthy Eating for All' and the strategy for 2010-2015[3] was designed around this, with the strategic objective to 'improve food safety and the balance of people's diet'. To help meet its information needs in these two areas, FSA identified the need for a major new survey, which will help measure progress towards some of the FSA's strategic objectives.

The first wave of the survey – the Food Issues Survey (FIS)[4] – has been conducted by a consortium led by TNS-BMRB Social. The survey is based on a random probability design with a sample of addresses drawn from the Postcode Address File. The fieldwork for wave 1 took place between March and August 2010 and around 3,200 interviews with adults across the UK were conducted in total. A report was published in March 2011.

In the second wave of the survey new questionnaire items are planned within two broad topic areas:

- Influences on food choice
- Perceptions of risk associated with food safety and diet

[2] http://www.igd.com/index.asp?id=1&fid=2&sid=2&tid=184&folid=111&cid=214
[3] Due to machinery of government changes, resulting in the transfer of nutrition policy from the FSA to the Department of Health and the FSA's renewed focus on food safety (as of 1st October 2010), the FSA Strategic Plan is currently under review.
[4] The Food Issues Survey (FIS) is referred to publicly as the Food and You survey.

1.1 Report structure

In the following sections we set out some of the key issues associated with 'influences on food choice' and 'perceptions of food risk' and provide a brief overview of the literature in each area. Although there is considerable overlap in the concerns and focus of the two areas, they are separated in the discussion below given that they are expected to each have a dedicated module in the Food and You survey wave 2. It is considered more manageable for respondents to consider the question topics separately, although if open questions are used the two topics might overlap.

Chapter 2 sets out the aims of the study and chapter 3 the multiple methods used to achieve those aims. Chapter 4 presents some recent trends on two key health issues of concern to the FSA; food poisoning and obesity. Chapter 5 provides an overview of recent government strategies designed to improve healthy eating choices and practices. In chapter 6 a synthesis of the literature review is provided in relation to 'food choices' and 'food risks' and cross cutting issues arising from these. Finally, methodological considerations are discussed in chapter 7, culminating in the presentation of 2 modules for FIS 2 relating to food risks and food choices.

2. Aims

This study is designed to identify which issues can be addressed effectively by means of survey data and the best approaches to use given the potential complexity of some aspects of food choice and perceptions of risk.

The FSA wishes to determine the prevalence and magnitude of different influences on food choice and thereby improve understanding about food safety and healthy eating. By means of the second wave of the Food and You survey, it is intended to assess how those influences vary according to the socio-economic and demographic characteristics of individuals and their family/community context. The overall aim of the FSA is to improve diet and achieve sustainable, secure and healthy eating patterns. Of interest is the extent to which government interventions can play a role in improving food choices.

FIS 2 also aims to identify the scale and degree of concern about food risks, whether in relation to safety or unhealthy diets. Of interest is the extent to which people are aware of a wide range of potential risks, how widespread is concern and the extent to which there is a gap between actual and perceived risks.

In order to achieve these aims, a specific objective of this project is to provide a set of draft questions to be included in Wave 2 of the Food Issues Survey. These questions will collect information on: a) food choice; and b) perceptions of risk. Broad questions the FSA wishes to explore include;

Food Choices

- Which factors influence food choices?
- Do individuals prioritise between potentially conflicting choices and how are tradeoffs reached?
- Do influential factors differ across sub groups (e.g.. age, ethnicity, religious affiliation, gender) or, perhaps, region?
- Do factors change over time? Any relationship between age and food choice may reflect differences associated with cohort or ageing, these must be differentiated.
- What or who influences food choices and changed behaviour to the greatest extent (e.g. parents, partners, other family members, friends, advertising, government, retailers) and does this differ according to, for example, age and gender (e.g. men may be most swayed by their partners who purchase food, while women may be influenced by other sources)?
- What is the perceived ideal role for government in relation to specific issues relating to food choices (e.g. educational, regulatory, advisory etc)?

Perceptions of risk

- What risks are individuals aware of?
- How are risks defined?
- To what extent do individuals think about these risks?
- How do perceptions of risk impact upon behaviour?
- What risks are people prepared to take?
- Will individuals take some risks but not others? (Is there a hierarchy of risk?)
- How do the risks perceived by the general public compare to the actual level of risk as understood by the FSA?
- Does the public understand food safety risk messages?
- Does the public act upon food safety risk messages?
- Are people aware of controls which exist to protect the safety of food?
- Do they trust these controls?
- Which aspects of food production are regarded as risky?

3. Methodology

In order to meet the aims and objectives set out above, a four stage methodology has been used, including; a literature review, expert interviews, exploratory focus group interviews and, finally, the preparation of questions for 2 modules within the second wave of FIS.

3.1 Literature review

The primary objective of the stage 1 literature review was to identify, map and appraise the range of methods that have been used to study food choice and perceptions of food-related risks. A secondary objective was to summarize empirical findings from these studies. Given the time frame and the primary objective, a formal systematic review was neither possible nor appropriate. However, to avoid bias and ensure rigour the broad approach of a rapid evidence assessment was followed. These have been developed in response to policy requirements for rapid reviews that can be delivered within a compressed time frame. While truncated in some aspects, rapid evidence reviews adhere to the core principles of systematic review methodology by using formal and transparent methods for the location, selection, appraisal and synthesis of evidence on a particular topic. Accordingly, formal search strategies and inclusion criteria were developed to identify and select relevant studies on food choice and perceptions of food risks

The search strategies and inclusion criteria used to select relevant studies are set out fully in Appendix I.

3.2 Expert interviews

Stakeholder and expert interviews were conducted with the following individuals with specialist knowledge in relation to food choices and perceptions of risk.

1. Dr Judy Green: medical sociologist (risk)
2. Professor Lynn Frewer: social psychologist (food choice and risk)
3. Professor Jane Wardle: psychologist (food choice)
4. Professor Anne Murcott: sociologist (food choice)
5. Rachel Craig: quantitative social researcher (food choice and Health Survey for England, methodological expertise on quant. surveys)
6. Caireen Roberts: nutritionist (researcher on LIDNS)

Experts were interviewed using a semi-structured topic guide included as Appendix 2. The interviews were used to establish perceptions of key issues relating to food choice or risk and the methodological challenges associated with their exploration. Also discussed were current research activities and perceived gaps in knowledge.

3.3 Focus groups

Focus groups were conducted in order to assess how individuals from a range of backgrounds understand the concepts of ‘food choice’ and ‘risk’ and how these concepts are operationalised. Four, two hour Focus Groups were convened, these revolved around 2 key issues;

(i) Trade offs - how people choose the food they eat, the factors they consider (e.g. cost, taste, health etc) and the trade-offs they make

(ii) How individuals understand and respond to various government health and diet messages and initiatives (relating to fat, salt and food poisoning).

The Topic Guide is included in Appendix 3. Quotas were developed to achieve diversity in terms of gender, age, income, urban/rural location and ethnicity. Older people (state pension age and above) were only represented in the rural South West. Elsewhere the age ranges were restricted somewhat to promote group homogeneity to encourage the flow of conversation. Rough quotas and locations are indicated below;

Quotas:

Rural (Bristol) – 2 men 30-55, 2 men 60-75, 2 women 30-55, 2 women 60-75

London – 1 affluent area, all employed earning £35,000+
2 men 25-40, 2 men 55-65, 2 women 25-40, 2 women 55-65

London – 1 deprived area, 4 x low income employed (<£20,000) 4 x unemployed
4 men 30-55, 4 women 30-55
4 Caribbean

Urban Midlands (Birmingham) – 4 men 16-50, 4 women 16-50 (young respondents must be living away from home)
4 Asian

3.4 Questionnaire development

Two topics have been developed, one related to food choices, the other to perceptions of risk. Given the uncertainty of question time availability in the second wave of the survey, two versions of each were developed. The first is as comprehensive as possible within a 10 minute time frame. The second is a slimmed down version of the former, assuming a 5 minute timeframe. The slimmer version will prioritise key central questions of interest to the FSA.

Question development is based on two sets of considerations, the first are general guidelines which apply to all questionnaire design processes (see box 1). The second set of considerations emerged from the literature review and relate to the operationalisation of our specific topics - ‘food choices’ and ‘perceptions of risk’. The challenge is to create clear, unambiguous questions which nevertheless capture the complexities of food choice and perceptions of risk which emerge from the interplay of attitudes, knowledge, intentions and behaviour. Choices are further influenced by taste, habit, financial resources and social context, including family setting, religious practice, ethnicity and wider culture.

Box 1: General considerations in questionnaire design

(see Appendix 4 for a more detailed version of this process)

- Identify general aims of the survey module
- Operationalise aims in terms of specific questions and outcomes
- Ensure that the language used by clients (such as ‘food risks’) is understood or used in the same way by the public. If not, identify appropriate concepts and language to inform question design.
- Build up question sequences with reference to internal logic and possible reaction of respondents (question order can influence responses)
- Decide appropriate use of scales, formats and anchor points
- Consider rotation of responses
- Intermix positive and negative items to avoid an acquiescent response set
- Ensure questions are simple and easily understood without ambiguity.
- Beware of social desirability bias
- Beware of loaded words such as ‘healthy’, ‘natural’, regular
- Avoid biased or leading questions
- Periodical behaviour measurement can be problematic. Care needs to be taken in relation to reference periods.

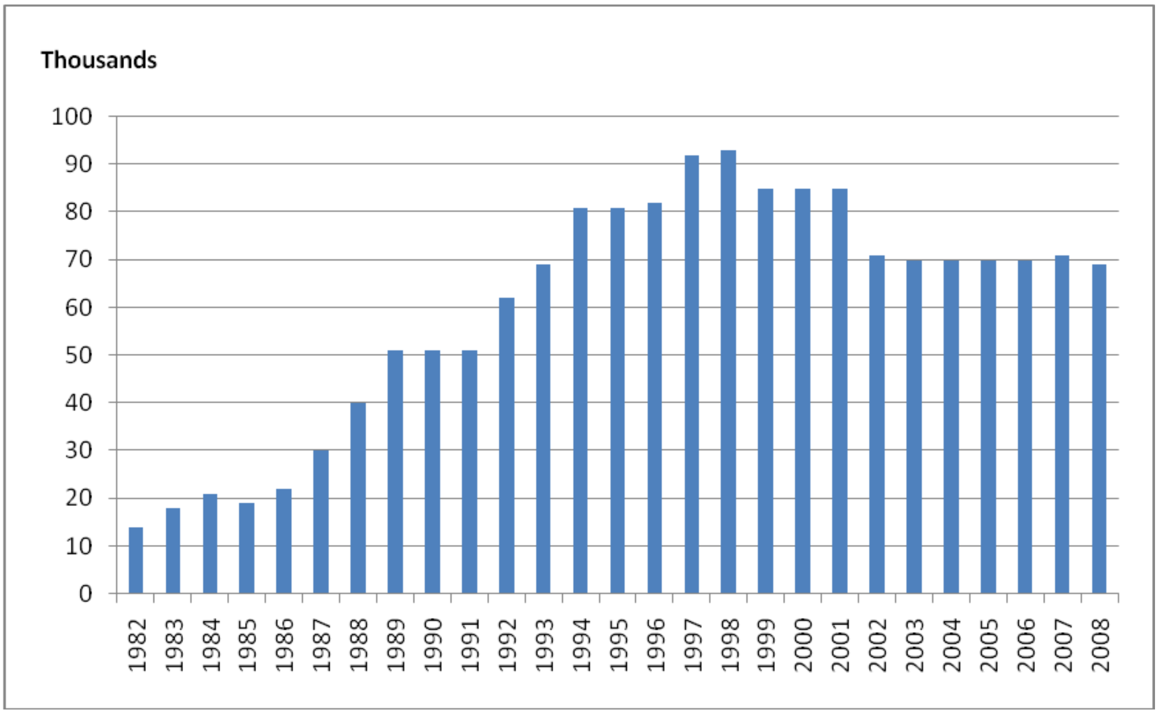
4. Recent Trends

The trends presented in this section highlight the need for urgent, targeted interventions by agencies such as the FSA and other bodies. A wide range of preventable food related illnesses is prevalent and growing throughout the UK and change at the level of individual choice and behaviour is needed to reverse these trends. Instigating change in behaviour is a significant challenge however, given the complexity and context dependency of decision making processes, discussed further below.

Food poisoning

Foodborne illness from microorganisms is recognised as a growing public health problem, many people become ill and thousands die from a preventable foodborne disease. Proper food preparation can prevent many foodborne diseases. Table 1 shows the increase in reported incidence of food poisoning since 1982, at which point around 13,000 cases a year were reported. Figures peaked at around 90,000 in the late 90s and have since improved but remained at around 70,000 in 2008. *Campylobacter* causes the greatest number of cases of foodborne illness in the UK each year. There were about 55,000 reported cases of campylobacteriosis in the UK in 2008 but many more cases go unreported (Redmond and Griffith, 2002) and the FSA estimates the actual number of cases to be closer to 375,000 each year (http://www.food.gov.uk/safereating/hyg/germwatch/)

Table 1: Food Poisoning 1982-2008



Source: http://www.defra.gov.uk/evidence/statistics/foodfarm/general/indicators/documents/c703.pdf

Obesity

Being overweight (with a BMI of 25-30kg/m2) or obese (BMI 30kg/m2 or over) is associated with a heightened risk of a range of life threatening illnesses including; heart disease, diabetes, cancers, and a range of other ailments. Recent figures indicate a widespread and highly entrenched problem. In 2008 42% of men and 32% of women in England were classified as overweight, with 24% of men and 25% of women classified as obese. Large numbers of the population are therefore at risk of ill health[5].

Both diet and physical activity are implicated in weight issues with trends suggesting improvements, on some measures, of both. Overall, based on self-reported measures, physical activity has increased among both men and women since 1997. By 2008 39% of men and 29% of women were meeting the recommended levels of at least 30 minutes of at least moderate intensity activity at least 5 times a week – up from 32% and 21% respectively in 1997.

In terms of diet, 25% of men and 29% of women reported meeting the government '5 a day' guidelines in 2008 although quantities of fresh fruit consumed fell by around 8% and of fresh green vegetables by around 10 per cent between 2007 and 2008. Energy intake also decreased, by around 2 per cent – to 2,276 kcal per person per day in 2008 (Nelson, et al, 2007).

5. Government campaigns

One of the aims of the new modules is to shed light on the extent to which the public understands food safety risk messages and the extent to which the public acts upon those messages. Key messages and campaigns over recent years include the 4Cs, Five Keys to Safer Food and The 3 Fives, each described below.

Educational tools designed to decrease the incidence of foodborne diseases include the Five Keys to Safer Food message[6]. A broader initiative, developed by WHO, is *The 3 Fives* campaign launched at the Chinese Olympics in 2008[7], combining food safety, nutrition and physical activity messages. These tools form part of an overall strategy aimed at enhancing public awareness about the contribution of food and physical activity to healthy lifestyles. The campaigns emphasise the extent to which

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[5] Source Health Survey for England, reported in NHS The Information Centre (2010) Statistics on obesity, physical activity and diet: England, 2010. http://www.ic.nhs.uk/webfiles/publications/opad10/statistics_on_Obesity_Physical_Activity_and_Diet_England_2010.pdf

[6] (http://www.who.int/foodsafety/micro/en/)

[7] (http://www.who.int/foodsafety/micro/general/en/index.html)

the healthy lifestyles they promote are dependent on choices made at the level of the individual.

The five keys to safer food include;

- Keep clean
- Separate raw and cooked
- Cook thoroughly
- Store food at safe temperatures
- Use safe water and raw materials

The 3 Fives are;

- Five keys to safer food (listed above)
- Five keys to a healthy diet (feed babies breast milk, eat a varied diet, eat plenty of fruit and vegetables, moderate intake of fats and oils, eat less sugar and salt)
- Five keys to appropriate physical activity (start physical activity if currently none performed, be active every day, perform at least 30 minutes of moderate activity 5 days a week, introduce some vigorous activity, young people should undertake 1 hour of moderate to vigorous activity daily)

The 4 C's are also part of the general food safety advice promoted by the Food Standards Agency (cleanliness, cooking, chilling and cross contamination);

Cleanliness
Prevent harmful bacteria from spreading by observing good personal hygiene:

- Wash hands after using the loo, after handling raw food, and before touching food which is ready to eat
- Do not handle or prepare food if you have had a stomach upset, have sores or cuts or weeping eye/ear infections

Cooking
Cook food thoroughly, especially meat and poultry. Make sure it is piping hot before serving. If you have to reheat food, make it piping hot all the way through and only reheat it once.

Chilling
Keep foods at the right temperature to slow down or stop bacterial growth. Look at the label on foods to see how they should be stored. Store perishable foods at 0-5 degrees centigrade.

Cross Contamination
Cross contamination, or the transfer of bacteria from raw foods to ready-to-eat foods, can happen by:

- Using the same chopping board to prepare raw and ready-to-eat foods
- Using the same knife for raw and ready-to-eat food
- Using the same cloth to clean up raw food spills and ready-to-eat food preparation areas

- Storing raw and ready-to-eat foods together. Always store ready-to-eat foods above raw foods in the refrigerator.

The success and impact of messages such as these are dependent on a number of factors. Individuals interpret information about risk on the basis of rational and affective thought processes. Research on risk perception, discussed in the next section, suggests that we are often more afraid of comparatively small risks, and less afraid of others that may in fact be more harmful. As noted in one HCRA publication; “understanding and respecting the analytic and affective ways people make risk judgments can help governments help citizens keep their sense of risk in perspective” (HCRA, 2003)[8]

Other campaigns promoting safe and healthy eating include;

Traffic light labelling
This labelling system shows consumer’s at-a-glance if food has high (red), medium (amber) or low (green) amounts of fat, saturated fat, sugars and salt.

A healthy diet is associated with cutting down on fat (especially saturated fat), salt and added sugars. A red light on the front of a pack indicates that the food is high in fat, sugar or salt. Amber indicates that the food is neither high nor low while green means the food is low fat, sugar or salt. In addition to traffic light colours, the number of grams of fat, saturated fat, sugars ‘per portion’ are also provided.

Eat well be well campaign
As part of the Chage4Life campaign, a Department of Health initiative, ‘eat well be well’ has a number of dimensions, aimed at exercising and eating both in and out of the home. A wide range of tips and guidance have been brought together to improve lifestyles and life chances. One example of practical advice provided by the FSA is the Eatwell plate (shown below) which is designed to make healthy eating easier to understand by showing the types and proportions of foods needed for a healthy and well balanced diet. To be successful, messages and advice need to reach the public, be understood and be sufficiently persuasive to change the behaviour of at least some consumers.

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[8] HCRA, 2003. June, 2003, Vol 11, Issue 2 Risk Communication: A neglected tool in protecting public health. (www.hcra.harvard.edu/rip/risk_in_persp_June2003.pdf)

During the interviews, experts were wary of commenting on government policy because they felt that, as academics rather than policy analysts, they were not qualified to do so. Of those who did offer comments, most suspected that the health promotion strategies focused on individuals, such as advertisements about healthy eating, had positive but limited effects. One expert interviewed felt that this was partly because whenever the government put out a sensible message about food choice, “this is met by a torrent of scorn in the popular media and massive efforts on the part of the food industry to undermine it”. Two thought that government information was sometimes “too general, which means everyone thinks it doesn’t apply to them”, and that different methods should be used for targeting different groups. Two experts felt that policies targeted at individuals (“getting individuals to feel bad about their diet”) were insufficient and that bolder interventions were also needed, such as “changes in school meals, changes in planning which affects what shops are there, [and] regulation or control of what people can and can’t put on the market”.

6. Literature Review Synthesis

The key issues explored in this section have emerged from the review of the literature and include: theoretical accounts of food choices and risk perception; an overview of factors influencing these; and cross-cutting issues. The synthesis provided is brief, presented more as an overview of key issues rather than a comprehensive in-depth discussion given the primary remit of the study to identify methodological lessons prior to designing two modules for the second Food Issues Survey.

6.1 Food choices

In this section the following issues are explored:

- The challenges of identifying the optimal methods to improve dietary behaviour, whether by means of food labelling, dietary guidelines, health campaigns/education, regulatory measures, food supplements or economic measures.
- Differing conceptualizations of *food choice* originating from biological and behavioural sciences, psychology, economics or anthropology/sociology.
- The constraints and influences on what we eat and the context dependence of these influences and thus food choice decisions.
- Tensions between cognitive/rational decision making processes, emotional/affective systems and wider structural constraints.
- The socio-demographic specificity of many determinants of food choices.

What we eat is a key predictor of our health status with healthy eating playing a central role in both the prevention and treatment of many diet-related chronic diseases, notably obesity, CHD, some cancers and type II diabetes. Specific objectives in the FSA strategic plan 2010-2015[9] and government white papers relating to food choice and dietary intake are the reduction of salt and saturated fat intakes, increased fruit and vegetable intakes, and a better energy balance to control obesity rates. To achieve these objectives requires shifting patterns of food choice, but how to do this effectively remains a major challenge.

Milio (1990) identifies the range of food and nutrition policy instruments as:

1. Nutrition education and food labels
2. Nutrient recommendations and dietary guidelines
3. Regulatory measures and food law
4. Supplementation and fortification
5. Fiscal and economic measures

[9] N.B The 2010-2015 strategic plan is currently being amended and a consultation was issued in December 2010: **http://www.food.gov.uk/news/newsarchive/2010/dec/strategy**. This acknowledges that nutrition work will continue to be delivered by the FSA in Scotland and Northern Ireland.

These are all intended to shift our dietary patterns, i.e. food choices, but each acts upon different sets of influences on food choices. So an understanding of what these influences are, how prevalent and whether they vary by population group and over time is vital to selecting the appropriate policy instrument/intervention.

A critical issue here is what is actually meant by the term *food choice*. While this might appear to be obvious, the term is deceptive in implying that it refers to a single phenomenon and one that it is straightforward to measure and explain. Human food choice, however, is a complex phenomenon, hard to predict and manipulate, and its measurement and analysis is not a straightforward affair. This is partly because of the huge range of factors that influence our food choices. These range from biological, psychological, economic factors through to social and cultural influences that all operate on different aspects of this phenomenon called food choice and vary in terms of their relative strength and influence from person to person and context to context.

None of the experts interviewed for this study was comfortable with the term "food choices" and viewed it as problematic. They gave several reasons for this. One was that the term was open to multiple interpretations; "I suspect it's one of these terms that means as many things as there are people who are using it". Another was that it focused attention on food choice as an act of conscious decision-making by individuals and did not acknowledge that "food practices" are often habitual and influenced by unconscious motives as well as structural influences and cultural norms. For instance, concerns about sustainability and ethics are part of broader value systems and these may underpin food purchases. More than one key informant felt that the term presupposed the existence of choice, and overlooked the fact that some people either had little control over what they ate or delegated that responsibility to someone else.

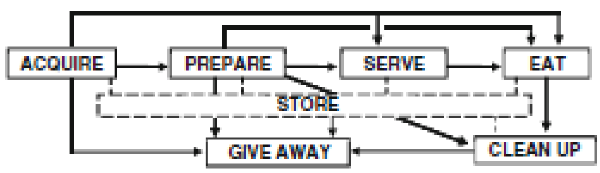
When asked about the main influences on food choices, experts put forward a wide range of potential influences on purchasing and eating behaviours, including: price; palatability and attractiveness; availability; advertising; convenience; household structure and the preferences of others in the household; long-term health concerns (in relation to salt and fat, for instance); "safety" concerns (regarding new food technologies, for instance); environmental and ethical concerns; prestige; novelty; familiarity; context and occasion (weekday versus weekend eating, and eating in versus eating out, for instance); habit; tradition; and cultural expectations (regarding the type of food to be served to guests, for instance). Experts did not feel able to rank these influences in order of importance, and some believed that it was impossible to do so. For some, this was because the precise constellation of influences on food choice is contextually variable, depending upon a person or social groups, particularly socio-cultural position. For those on low incomes, however, financial constraints are probably the key limiting factor

Many different theoretical frameworks drawn from both the natural and social sciences have been used to study food choice, but these all proceed from very different assumptions about the nature of food choice itself and what are seen as its influences. This is why food choice presents what Gofton (1986) calls an ontological challenge – is it part of nature or part of culture? That it can be characterized in different ways presents another difficulty in the measurement of food choice and the identification of ways to influence it.

Food choice can be conceptualized at one extreme as a purely biological act based upon physiological need and operating via stimulus-response mechanisms designed to ensure an optimal intake of energy and nutrients, or at the other extreme it can be conceptualized as a form of social activity shaped by cultural and symbolic values and that it serves non-nutritional purposes, such as the making and breaking of social relationships. As Murcott (1998a) has pointed out, the term *choice* itself is problematic with dictionary definitions including: the act of choosing, the power of choosing, that which is chosen, and an abundance of items from which to select. These multiple meanings have led to very different interpretations or definitions of food choice not only across, but also within academic disciplines.

Anthropologists have pointed out that our food choices are in fact decisions that occur at many different stages in the food cycle and where different sets of influences may come into play (Goode 1989; Goody 1982). These have been characterized in different ways: both Goode and Goody and other anthropologists working in non-industrial societies include the processes of production, distribution and exchange, but, while the broader food system places limits on the types and amounts of food available to consumers, these are less directly relevant in a market economy, such as the UK. In the context of the UK, Marshall (1995) identifies the elements of what he calls *domestic food provisioning* as acquisition, preparation, cooking, eating and disposal. This is broadly equivalent to Sobal and Bisogni's (2009) typology of *food choice decisions* that encompasses the acquisition, preparation, serving, eating, giving away, storage and cleaning stages of food handling. These are shown in Figure 2 below:

Figure 2: The type and sequence of food behaviours about which decisions are made:



Source: Sobal and Bisogni (2009)

A key feature of this review therefore is the development of an integrative conceptual framework[10], presented in the next section, that maps out these different types of food choice and the influences on these. The framework also highlights those elements of food choice that relate to the FSA's strategic plan 2010-15 and allows some understanding of the interaction between and relative importance of different influences on food choice and how these might vary by population group. Finally the framework underpins the critical synthesis of the relevant literatures and the mapping of methods used to study food choice.

6.1.1 Theoretical accounts

As noted above, there are many different theoretical accounts of food choice in the academic literature each of which frames the object of study, i.e. food choice, in a fundamentally different way. This is a huge field, but the main theoretical accounts relevant to public health are[11]:

1. Biological and behavioural approaches
2. Psychological approaches
3. Economic approaches
4. Anthropological and sociological approaches

Each of these uses very different methods with their attendant epistemological assumptions and also conceptualizes food choice and hence what is seen to influence it in very different ways. While each broad approach encompasses many different specific theories, they can be very crudely characterized:

1. Biological and behavioural approaches

- Food choice is conceptualized as a behavioural response driven by physiological processes and mechanisms
- It operates via homeostatic stimulus-response mechanisms reacting to internal or external cues

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[10] There is a tendency in the literature to use the terms framework and model interchangeably, which can lead to confusion as well as imprecision. Therefore, following Carpiano and Daley (2006), a conceptual framework is defined here as the definition of a set of variables and the relationships between them to account for a given phenomenon. Its purpose is to organize the field of enquiry and to set the stage for more specific theories that provide more specific causal explanations for particular outcomes or behaviours.

[11] There are also rich literatures from other disciplines notably history, philosophy, political science, and geography, but it is beyond the scope of this review to include these.

- The purpose of eating is to satisfy energy and nutrient requirements
- Food is seen as a source of energy & nutrients only
- Individuals or species are the unit of analysis

2. *Psychological approaches:*

- Food choice is conceptualized as a form of intentional behaviour
- As such, it is a function of the specific psychological characteristics of individuals, e.g. their knowledge, attitudes, perceived social norms, feelings of self-control/efficacy, experience, gratification and so forth
- The individual is the unit of analysis

3. *Economic approaches:*

- Food choice is seen as an act of economic consumption equivalent to any other act of purchasing and hence driven by desire for maximum utility
- At its simplest, choice is seen as determined by supply and demand (as functions of cost/price, income and utility), although many more complex econometric models have been developed
- The value of food is as a commodity comparable to other consumer goods
- Variable unit of analysis

4. *Anthropological and sociological approaches:*

- Food choice taken as a form of social behaviour or symbolic/ritual action
- Most theories focus on the non-nutritional values and functions of food and eating as what drives our eating patterns and food practices
- "Food is not feed", but is seen as a carrier of socially defined meanings and values
- Accordingly the unit of analysis should correspond to relevant collective social groupings to capture these meanings and social functions

These differing approaches, each with its own set of implicit assumptions about the nature of food choice, carry a number of implications relevant to this review. Firstly, as Sobal and Bisogni (2009) note, because each perspective is based upon some limiting assumptions, this means that any explanations generated are inevitably partial. It also creates a lack of commensurability in the object of study, research methods and findings that in turn make it very difficult to review and summarize studies on food choice across disciplines. Differing conceptualizations of *food choice* inevitably lead to different factors being identified as causal as well as the use of different methods of data collection and units of analysis to study them. This then makes it difficult to trace the interactions and relative importance of different types of factors in influencing food choice in any rigorous way; we cannot just stack up the findings from disparate studies and disciplines to look for some lowest common denominator.

So how then do we find our way out of this apparent dead end, and particularly if what we want to know is what are the principal factors influencing a particular group of peoples' eating habits, that we may want to change for public health reasons? If we just throw in all possible factors that we think might be important, there is a danger that we end up with a description that is so global as to be almost meaningless and certainly not very helpful in any practical sense with no indication of what influences are potentially modifiable. One solution is to turn things on their head and to think of the factors influencing food choice decisions operating as a hierarchy of constraints; constriction or limitation of choice is an element lacking in most models of food choice, but few of us are totally free to choose foods from what is available in our immediate environments (Wheeler, 1992). Rather, there are a whole range of both distal and proximal influences that act to both delimit and make available certain options, thus defining the set of foods from which we can actually choose. Looking at food choice from this perspective thus offers us a means of identifying both the different types of causal influences on food choice and their relative importance in both a general sense and in specific contexts.

Table 2: Influences on food choice decisions: dimensions of constraints

Domain:		Determines:
Food system: • Food production & distribution • Agricultural policy • Retail system & advertising • Food assistance programmes	→	Foods available at societal level
Physiology & culture: • Digestive physiology & nutrient requirements • Genetics? • Cultural definitions of "food" • Cultural definitions of food requirements for different social groups (ethnodietetics)	→	The edible & foods culturally permissible and available? to different social groups • *cultural repertoires or menus*[12]
Physical setting: • Type and location of shops • Range and quality of products	→	Foods available to a household/individual • *purchase decisions*

[12] We do not choose and eats food at random, but according to largely socially defined conventions. These useful terms derive from social science describe these. Cultural repertoires describe the strategies of action that are available to us (Swidler, 1986) and menus the culturally defined selection principles that guide our selection of individual food items from the totality available to us (Beardsworth and Keil, 1997).

Entitlements: • Income • Prices, including relative costs of healthier foods • Shopping capacity (time, transport, physical ability)	→	Foods accessible to a household/individual • *purchase decisions*
Social setting: • Eating at home: household structure and roles, allocation rules • Eating out: e.g. restaurants, workplace, school	→	Foods that can be eaten by an individual • *Storage, planning, preparation, serving, eating and disposal decisions* • *Purchase and eating decisions*
Individual characteristics: • Socio-demographic characteristics, e.g. age, gender, religion, region • Psychological attributes and states, e.g. knowledge, motivations, confidence, attitudes and values, mood, stress • Budgeting and food preparation skills • Time • Likes and dislikes, "taste" (as response to sensory and palatability qualities of foods), feelings of hunger/satiety	→	Food preferred & chosen to be eaten by an individual • *Storage, planning, preparation, serving, eating and disposal decisions*

This framework set out above is adapted from Wheeler (1992). It is similar to other ecological models, such as the ANGELO framework for the analysis of obesogenic environments (Swinburn et al., 1999) and the NICE conceptual framework for public health (Kelly et al., 2009), that are designed to bring together the range of complex influences on health and nutritional status and show the linkages between broad structural factors and those operating at the level of the individual. As Marshall (1995) points out in relation to food choice, most models focus on the interactions between individuals, their characteristics and foods and privilege the notion of the rational consumer and exclude broader domains of influence.

The domains set out the broad range of factors that influence food choice decisions with more specific choice drivers listed in the bullet points. These are not intended to be definitive, but rather to illustrate the huge range of choice drivers and the levels at which they operate. These have been identified from Dowler (2008) and Story et al. (2008). These determine the sub-set of foods that we can choose from and the different types of food choice decisions are set out in the right hand column. Of course real life is not as tidy as this and there are interactions between domains, particularly between those of the individual and social setting. Also socio-demographic characteristics, such as socio-economic status, age, gender, religion, ethnicity and so forth, will influence both our cultural repertoires of eating and also our entitlements. While it is impossible to capture all these interactions in a single generic framework, more specific frameworks could identify the choice drivers relevant to particular social groups and contexts and where interactions and trade-offs may occur.

6.1.2 Influences on choice

As indicated in the framework above there are a huge range of factors that influence our food choice decisions and these range from environmental factors, such as availability and access, through to individual attributes, such as knowledge and attitudes, many of which are unconsciously shaped by our particular cultural norms and social position. The literature on food choice is very large and diffuse crossing methodological boundaries and a variable object of study. This makes it difficult to summarize, but the majority of outputs from the literature searches for this review fall into two groups: firstly market research, surveys and psychometric studies using quantitative methods that mostly focus on examining the relationship between the characteristics of individuals and how these might correlate with the food choices that they make; and a smaller body of work using qualitative methods some of which looks at food consumption practices in specific contexts. Many studies are just of food choice generally and have not differentiated between different food choice decisions and specific influences on these, making it impossible to generate any kind of definitive list of influences.

The following discussion of the varied influences on food choice has been organised around the domains of food choice identified in the figure, namely:

- The food system
- Physiology and culture
- Physical setting
- Entitlements (income and food prices)
- Social setting
- Individual characteristics

The food system

With globalization and climate change there has been a resurgence of interest in analyzing food systems and there is now a growing literature on this. While falling beyond the scope of this review, the food system provides the wider context within which food choice decisions are made and as indicated in the framework above sets limits on what can or cannot be chosen. Fitzpatrick et al (2010) in their comparative analysis of different food cultures show how food production influences consumption practices by not only determining food availability, but also by contributing to wider socio-economic trends, such as industrialization, and indirectly via influencing policy. Within this broad domain there are also many more specific choice drivers that operate to shape choices, such as government policies and the structure of the food retail system. Public concern about climate change and in particular concerns about sustainability, food production systems, corporate social responsibility, social justice and ethics are an emergent influence on food choice decisions.

Ruhm (2010) deploys a dual decision model that emphasises the interaction between individual 'deliberative systems' which operate according to traditional economic utility maximisation principles and an 'affective' system which is responsive to stimuli to the exclusion of longer term considerations. According to Ruhm, 'food engineering' is a critical determinant of rising obesity which manipulates food characteristics to stimulate consumption. The key elements of food engineering are higher levels of fat, sugar and salt which enhance palatability. Essentially, the profit motive is identified as a critical determinant of rising obesity with food producers engineering products 'to stimulate the affective system so as to encourage overeating'. The economic gains for businesses which are associated with engineered foods, are highlighted by Lawrence (2010); below average profit margins of 3 to 6 per cent are associated with healthy non-processed foods, compared with margins of 15 per cent for highly processed, less healthy foods.

Studies within the ESRC Cultures of Consumption programme show the complexity of consumer relationships with food production systems and new consumer motivations, such as ethical consumption, but few of these appraised the impact of these on actual consumer choices. Cox et al. (2008), however, found peoples' purchase of foods from alternative food producers was complex and often part of a larger life project encompassing ethical and ideological concerns. This is echoed by a market research study (Chambers et al., 2007) that found strong consumer preferences for local food and a desire to support local farmers, but that price and convenience were barriers to increased purchase. Similarly Scarpello et al. (2009) found that people in rural areas liked to use local shops and that these were seen as important for community identity, but this sometimes conflicted with concerns about price and wider availability of some foods at supermarkets.

Pepper et al. (2009), drawing on social psychology, examined socially conscious and frugal consumer motivations for sustainable consumption and conclude that the former represents a "pro-social" value and that the latter is linked with lack of materialism and income constraints, but conclude that it does not yet "represent a fully developed moral challenge to consumerism". Studies looking at consumer attitudes regarding animal foods consumption in relation to ethics and climate change reveal ambiguities and ambivalences amongst consumers and conflicts between the concerns of consumer as citizen versus consumer as purchaser (Cole et al., 2009; Schrader and McEachern, 2004). It would appear that ethical consumerism is a growing trend; an Ipsos-Mori report for The Co-Operative Bank in 2000 concluded that the "*public do not like or associate themselves with the term "ethical consumer*"" (Ipsos-Mori, 2000), but later opinion polls found that concerns with sustainability are becoming increasingly important. The overall prevalence of these concerns, the degree to which they differ by social group and their overall impact on food choice decisions is unclear, although the findings of an on-line survey by DEFRA into consumer concerns regarding food security (Dowler et al., 2010).

Physiology and culture

Physiology and culture demarcate the edible from the inedible, food from that which is not food. Clearly physiology has a role here as there are many foods, such as grass and leaves, that as humans we are incapable of digesting. Experimental and laboratory-based studies examining the physiological basis of food choice were excluded from the review, but there is an enormous amount of research in this area on both humans and animals that links biological and behavioural mechanisms with the regulation of food intake. A new interest is the study of genetic determinants of obesity and even food choice with one twin study located looking at food choices; Teucher et al (2007) conclude that there is a heritable component to dietary patterns, but the implications of such findings for public health are unclear.

Culture is also a key determinant of food choice decisions defining what is considered food within a particular society or ethnic group and beyond this the classification of foods into different types, rules for the preparation and allocation of foods, meal cycles and formats, the social and spatial aspects of eating and also its non-nutritional meanings and functions. Collectively these shared meanings and practices that shape and influence the full range of food choice decisions can be described as *food culture (*Fitzpatrick et al., 2010). This largely operates as a form of tacit knowledge with many of the decision-making processes around food and eating being only partly conscious and rational in the sense that they can be explained in terms of knowledge and other conscious determinants (PSI, 2009). The term *cultural repertoires* (Swidler, 1986) is another useful analytic concept here and one that has been used to access and describe the routine and largely non-reflexive choices that are made around food and eating (Ristovski-Slijepcevic et al., 2008).

The sociology/anthropology of food eating is now an established field and some classic ethnographic studies have been conducted in the UK examining the domestic contexts of food and eating. There is now a large body of qualitative research on food and eating in the UK and two notable research programmes are the ESRC's The Nation's Diet in the 1990 (Murcott, 1998b) and the Leverhulme Changing

Families, Changing Food research programme (Jackson, 2009). Broadly these show the complexity and changing nature of food consumption practices and influences on these, but also the continuing importance of domestic contexts. The literature searches did not reveal any other significant studies examining food cultures published since 2000 and that met the other inclusion criteria. While examining young people and not adults, the work of Wills and colleagues that draws on Bourdieu illustrates how eating patterns are embedded in social processes and also reflect and reinforce social distinctions (Wills et al., 2005; Wills et al., 2010). They argue that food choices have not become reflexive and individualized in contemporary society, but remain largely a product of the values that accumulate within particular social groupings. Overall there is a lack of studies that have explored the different cultural repertoires of eating within the UK and the social distribution of "*taste*" and its role in determining observed social differences in nutritional intake (Murcott, 2002). An important aspect for survey design could be the role women can play in the household as as a repository and transmitter of knowledge about food and its preparation, this would be worth further exploration.

Physical setting

There has been much interest in the impact of physical settings upon food availability and affordability and specifically in food deserts (populated urban areas characterized by a low density of retail outlets and hence limited access to affordable healthy foods). Cummins and Macintyre (2002), however, comment that the evidence in terms of impact on cost and availability of food is not clear cut and the term should be used with care. Similarly the interplay between physical environment as an influence on food choice decisions, and particularly purchase, and the influence of food cultures and other individual attributes is unclear (Brug et al., 2008).

Entitlements

Sen's term of *entitlements* is used here as a generic descriptor for the social and economic factors that determine the accessibility of foods to an individual or household (Dreze and Sen, 1989). In a market economy such as the UK two principle factors are income and food prices. Dietary surveys, such as NDNS and LIDNS, show a clear patterning of food and nutrient intakes by socio-economic status and in LIDNS price/value/money was cited as one of the most important influences on food choice along with the quality or freshness of food (Nelson et al., 2007). More money/price of healthier foods was also given by both men and women as the main factor that would facilitate change to a healthier diet. Income and price alone, however, do not fully explain variation in diet and food choices by socio-economic status. Overall there have been few recent studies that have examined the food choices of people on low incomes and even fewer that have attempted to disentangle the relative importance of broader structural influences, such as availability and entitlements, versus other influences on food choices (there is some earlier qualitative work from the 1990s).

Social setting
The broader sociological and anthropological literature on food and eating shows that social context has great influence on what we eat and this operates in many ways. For instance it will determine what is available in terms of types of food to choose from, but also how they are prepared and served and the social rules and functions of eating; eating in a restaurant is very different to eating in a workplace canteen as is eating at home alone versus eating as a guest at someone else's house (Fieldhouse, 1986).

As noted above, there have been some classic ethnographic studies of food and eating in domestic contexts in the UK starting with the Douglas and Nicod (1974) and also the work of Charles and Kerr (1988) and Murcott, (1983). These all illustrate the importance of household structure, gender roles within this, and the importance of cooking and eating as expressing roles and relationships. Some of these themes have been revisited in the Leverhulme Changing Families, Changing Food studies and they illustrate on-going importance of the family as shaping consumption practices and food choice decisions (Jackson, 2009). Most studies of domestic food practices focus on behaviours from purchase through to eating, but exclude practices relating to food disposal and waste. The threat of climate change and the new concern with sustainability, however, means that there is now a focus on reducing domestic waste. As estimated by the WRAP report, average household food and drink waste is 330kg per annum (WRAP, 2000). No new empirical studies on domestic waste and factors that might influence this were identified, although David Evans of Manchester University has conducted ethnographic research (Evans, 2010). The SOAS Food Studies Centre also held a workshop on food waste in July, 2010.

One of the clearest trends in British eating habits is the increase in eating out with a corresponding decline in consumption at home and also in food preparation (Cheng et al., 2007). Despite this, virtually no studies were found of eating out by adults and what factors may influence food choice decisions in these contexts (although there are many studies of young people and the school environment). An exception is Schroder and McEachern (2005) who used mixed methods (focus groups and a survey) to examine students' reasons for buying fast food and the influence of ethical values. They found that 52% of the variance in fast food purchasing was explained by attitudes regarding brand value, nutritional value, ethical value and food quality. There is some earlier work from the 1990s and notably that of the sociologist Alan Warde (Warde et al., 1999).

Individual characteristics

Most of the food choice literature and the studies identified by the literature searches fall into this category, that is studies examining the attributes of individuals as a causal influence on their food choices. This category is methodologically diverse including psychometric studies, large scale surveys and market research. A huge array of individual level characteristics have been identified as correlating with food choice decisions and the types of factors examined and thus found as potentially influencing food choice relate to the particular disciplinary stance of the study. Thus, psychometric studies focus on psychological characteristics, such as attitudes, intentions, norms, motivations, or feelings of self-efficacy or confidence. The particular characteristics chosen are often dependent upon the choice of a particular behavioural model, such as the theory of reasoned action (perhaps the most widely used social cognition model in relation to food choice). Broadly these studies show that there is a correlation between psychological attributes such as attitudes and knowledge, but in terms of explanatory value, much variance remains unaccounted for in these models (see the review by Taylor et al., 2006).

Large scale population surveys and market research have mostly examined the association between socio-demographic characteristics and food choice (with food choice measured mostly as eating in a general sense, sometimes as the consumption of particular foods, such as fruit and vegetables, and food purchases), although some include other variables such as attitudes and knowledge. Broadly, these show that there are clear and stable patterns in food consumption associated with socio-economic status, age, gender, education and ethnicity, although the strength of association is variable; further analysis of the HSE 2003 found fruit and vegetable consumption was associated with gender, ethnicity, household structure, education and income, but that these associations were attenuated in those with the lowest intakes (Boukouvalas et al., 2009). This review did not look at which of these factors is most important for the two topics of interest and this would be worth further exploration. However, it is likely that this will depend on context and the topic being explored, for example, the aspect of food choice under investigation.

6.2 Food Risks/safety

In this section the following issues are explored;

- The time and control dimensions of risk factors.
- Individual perceptions of risk and their relationship with ‘objective’ risk assessments.
- Psychometric explanations of how risks are perceived.
- Socio-demographic differences in perceptions of risk.
- The relationship between safe food practices and socio-demographic groups, in terms of cooking, preparing and storing.

- Key challenges in addressing issues of risk in a survey context.
- Public perceptions of food safety communications, trust in public authorities and responses to public health campaigns.

Food safety is a key element of the Food Standards Agency's strategic remit. Food safety can be defined in narrow terms, with reference to the risk of contracting a disease as a consequence of consuming particular products. More broadly, food safety can also encompass nutritional qualities of food. Potential food related risks also have a time dimension. Food can have an immediate impact on health due to improper cooking, hygiene or storage, while other risks have a cumulative effect, arising from poorly balanced nutritional choices with longer term consequences on health (Green, 2009). A third set of risks are beyond the control of consumers, apart from at the point of purchase, these include food additives, pesticides and other contaminants which may have an adverse effect on the health of consumers. Considerable debate has also surrounded Genetically Modified (GM) foods, designed for a variety of purposes, including the promotion of longer shelf life, higher vitamin content, pest resistance or low fat absorption in potatoes[13]. Modern biotechnology has raised concerns, however, over the impact of genetic modification on the long term health of both individuals and the environment.

The extent to which food risks encompass a wide range of concerns, is highlighted by Rondeau and McIntyre (2010: 211) who define food safety as, 'the probability of not contracting a disease as a consequence of consuming a certain food, but food safety also includes broader concepts such as nutritional value and production methods and food-related issues such as animal health and veterinary drugs, chemical contaminants, food additives, food allergies and intolerances, food-borne illness, packaging, and food handling".

Experts similarly identified a wide range of risks associated with food: diet-related risks to long-term health; the more immediate risk of food-borne illness; risks associated with new food technologies; risks to household finances; social risks (fear of being seen as a "fussy parent", for instance); and broader concerns about climate change, sustainability and food security. In relation to new food technologies, one key informant suggested bionanotechnology and synthetic biology as emergent risk issues.

The distribution and depth of consumer anxieties vary according to the food items involved and the associated food safety issues, whether food poisoning bacteria, chemicals such as pesticides and hormones or nutritional properties such as fats, salt or sugar. Different strategies are required to deal with each of these risk types,

[13] www.actionbioscience.org/biotech/sakko.html

reflecting the different time scales, sources of risk and behaviours involved. This report is concerned only with food choices and perceptions of risk among individuals, rather than the regulations and procedures established, often internationally, to control food production and processing.

Objective and subjective food safety are distinguished in the literature, with scientists and food experts deemed to have calculable knowledge about objective safety while subjective food safety refers to the perceptions of consumers, based on a wide range of cues and information sets. Grunert (2005:13) notes that while objective and subjective safety (or risk) tends to deviate, "until recently, such deviations were mostly regarded as a nuisance that has to be tackled by better consumer information and education. More recently — and in the light of the failure of attempts to educate consumers to become amateur food scientists—this attitude has given way to a recognition of the necessity to deal with consumers' perceptions of risk and safety as they are".

6.2.2 Theoretical accounts of risk perceptions and behaviour

In developing understanding of the underlying motives, desires and rationale associated with food related decision making and behaviour patterns, it is hoped that agencies such as the FSA can develop better communication strategies to effect healthier individual practices in relation to the purchase, storing, preparation and eating of food.

To understand perceptions of food risks, it is instructive to consider the broader risk literature. Risk perception models are dominated by psychometric studies which seek to explain why different hazards are perceived differently and are therefore likely to invoke different behaviour responses (Fischhof et al, 1978; Slovic, 1987; Nelson, 2004; Sandman, 1987; Lupton, 2000; Groth, 1998, Sjoberg, 2000 Grunert, 2005). Of particular interest for many studies is the 'gap' between supposedly objective, measurable risk and individual perceptions of risk. Perceptions are explained as a function of risk attributes and, in summary, the following dimensions of risk have been identified as critical in explaining how hazards are rated or ranked and why a 'gap' in perceived compared with 'objective' risk is likely to persist;

- Control
- Optimistic bias
- Dread
- Natural vs manmade
- Values / ideology

Control
Europeans think that their health is more likely to be adversely affected by environmental pollution, car accidents or serious illness than by the food they eat (Eurobarometer, 2006). Broadly, self-imposed risk is viewed as more acceptable. Hence people tend to feel more at risk as passengers than when driving themselves (HCRA, 2003) and meal preparation at home is, by objective standards, riskier than meal production in a factory, yet consumers perceive ready-made meals as more dangerous than home cooked meals (Grunert, 2005).

Marris and Langford (1996), asked individuals to assess the seriousness of risks associated with; sunbathing, food colouring, genetic engineering, nuclear power, mugging, ozone depletion, microwave ovens, driving, AIDS, terrorism and alcohol. Familiar and voluntary potential hazards such as microwave use, food colouring or alcohol were seen as low risk whereas less likely but potentially catastrophic events over which they had little control were perceived as high risk.

Optimistic bias
Optimistic bias is the tendency to view others as at greater risk than oneself (Groth, 1998). Although consumers may appreciate the risk associated with their own handling of food for example, they tend to believe that the probability of being affected themselves is lower than the probability of the average consumer being affected. In research eliciting views of risks, it is important therefore to take care in the specification of 'risk targets' (Sjoberg, 2000) as individuals estimate risks differently for themselves, their families and the general population.

Dread
One of the dimensions of risk perception identified by Slovic (1990) is dread. One example is perceptions of cancer - despite the fact that heart disease kills many more individuals a year, cancer evokes more fear as it is perceived as a 'dreadful way to die' (HCRA, 2003). Hence, hazards associated with cancer, such as radiation and industrial chemicals, evoke strong fears. Affective judgements based on feelings such as fear apply in this context. Finucane et al (2000) used the 'affect heuristic' to explain an unexpected negative correlation between benefit and risk perception, suggesting that good feeling towards a situation (i.e., positive affect) can lower risk perceptions and raise benefit perceptions.

Natural vs. man made
Reviewing risk perceptions, Harvard Centre for Risk Analysis, HCRA (2003) observe that anthropogenic sources of radiation such as nuclear power, mobile phones, or electrical and magnetic fields evoke greater concern than radiation from the sun, despite the latter carrying notably greater risk in terms of skin cancer. Yet 'natural' risks cause less concern. Accordingly, 'tampering' with genetics to produce GM

foods, or other modified food technologies can be viewed as potentially dangerous and a risk to individual health and the wider environment.

Values and attitudes

Risk perception is also a question of ideology (Sjoberg, 2000). For example, those in favour of nuclear power tend to see it as less risky compared with anti-nuclear power proponents. It is argued that the attitude toward nuclear power determines the perceptions of risk rather than vice versa. Similar processes lie behind how consumers respond to government educational campaigns. It is suggested that an improved knowledge base will improve acceptance of biotechnology and lead to more favourable attitudes toward, for example, GM foods. Frewer (2003), however, found that individuals with extreme negative views toward biotechnology will distrust information sources rather than change their attitudes. Lusk et al (2004) similarly find that prior views have a significant effect on how individuals respond to new information.

Additional attributes of risk, identified as determining subjective risk perceptions include; voluntariness (choosing to eat a high fat diet compared with unknown levels of contaminants in food), immediacy (whether risk may affect an individual immediately or at some time in the future), newness (for example new technological developments), catastrophic potential or severity (may kill or cause illness to large numbers number of people), personal experience of a food safety incident (Nelson, 2004).

Lupton (1999) identifies two dominant theoretical perspectives in the literature on risk; cognitive science and social constructivist perspectives. The cognitive science or technical and scientific approaches adopt a ‘realist’ perspective according to which there are ‘objective’ measurable risks which can, in principle, be quantified. Subjective perceptions of risk are viewed as more or less accurate relative to the objective risk ‘facts’. Differences in lay and scientific perceptions of risk are accordingly interpreted in terms of a ’deficit’ or a ‘perceptual pathology’, requiring explanation. Psychometric risk analyses fall within this perspective which are said to ignore the sociological, cultural and ethical determinants of human judgement and behaviour.

By contrast, the social constructivist perspective emphasises the social and cultural aspects of risk and adopts a more relativist position. Horlick-Jones and Prades (2009: 414), for example, emphasise the extent to which risk perceptions and resulting behaviours are ‘embedded within a matrix of everyday associations, preferred ways of life, trust relations, economic constraints and emotional commitments’. So responses to risk issues are not instrumentally calculative and in order to understand food choices it is necessary to understand also the cultural, emotional and economic context of such choices. Hence the variance among different social groups in their understandings and identification of, and subsequent responses to, risks. In order to influence a change in behaviour, therefore, merely providing facts and figures and promoting health messages may not be sufficient.

6.2.3 Spontaneous and prompted food concerns

According to Knox (2000), consumer concern over food safety has steadily increased since the 1970s, with food risk becoming particularly salient following a wide range of food scares such as BSE, E-Coli, Salmonella and Dioxin residues. Knowles et al (2007) concur that prior to the mid 1970s, food safety was neither a significant political, scientific or societal concern. Food scares are said to have undermined public confidence in the food industry, government and regulatory bodies.

In general though, food is still thought of in positive terms, associated primarily with taste or pleasure. Evidence from a recent Eurobarometer study (Eurobarometer, 2006) suggests that fewer than one in five consumers spontaneously associate food with health and, when prompted, no particular food-related concerns predominated. Previous food scares, such as BSE or dioxins were not at the forefront of concerns among consumers, instead food poisoning, residues in food, and obesity were more likely to be raised as an issue (Eurobarometer, 2006 Risk Issues, EC). The low salience of BSE for consumers by 2005 is not surprising, however, as concern about food scares has a decay function. In 1996 there was a sharp decline in beef consumption but within a few years consumption had returned to previous levels (Lupton, 2000).

Draper et al (2005) similarly found that safety per se was not a major concern for respondents and provided a limited framework for making decisions about food. When asked directly about the risks in food, participants reported some concern, but in more open discussions, levels of concern about food risk emerged as relatively low. Safety is clearly therefore not the only conceptual framework in food choice decisions. It competes with other frameworks constructed around price, pleasure, socialising and convenience. Only in discussions of cost did safety emerge as an explicit issue – and here it was seen as clearly incompatible with cheapness. Lupton (2000) also found that safety is not the most salient framework in choosing food.

When presented with a list of potential food safety risks, consumers appear slightly more concerned about external risk factors that are beyond their control. They are less worried about personal factors such as food allergies and those linked to their own behaviour, such as food preparation, hygiene and weight gain. In general, women tend to be more worried about food safety than men (Eurobarometer, 2005).

In a 2003 UK consumer attitudes to food standards survey[14] individuals were asked whether they were concerned about the following specific prompted risks associated with food . The proportion expressing concern is indicated;

Food poisoning	60%
Amount of fat	53%
Amount of salt	50%
Amount of sugar	47%
Pesticides	46%
Use of additives	45%
BSE	42%
Conditions under which animals raised	39%
GM foods	36%
Antibiotics in meat	35%
Irradiated food	20%

Having established these levels of concern in the context of a survey we need to construct additional questions to determine the steps consumers take in response to these concerns – do they avoid certain foods, change the occasions on which they use them, eat less of particular products or perhaps switch brand allegiances? Or does inertia prevent changes that reflect the degree of concern, bearing in mind that prompted concerns do not accurately reflect the levels of concern which pertain on a day to day basis or, more relevantly, at the point of choice or purchase. Also of relevance is the extent to which individuals trust regulatory authorities to respond adequately to potential risks, thereby alleviating concerns sufficiently to allow continued consumption of specific foods or food groups.

6.2.4 Social and cultural influences

Some psychometric studies have attempted to capture social and cultural group factors. The less powerful tend to be more concerned about risks. Women are more concerned with risks, as are non whites (Flynn et al, 1994, Graham & Clemente, 1996), while higher educated, higher earners rate risks less seriously.

Shaw (2003) has noted a decline in consumer knowledge due to the ‘erosion of practices previously known and accepted by previous generations’. Knowledge is

[14] http://www.foodstandards.gov.uk/multimedia/pdfs/cas2003.pdf

associated with age, education, class and residence (urban/rural) (Green Draper & Dowler, 2003, De Boer et al 2004).

The link between knowledge and behaviour is less clear however. Demographic differences in relation to knowledge ‘are not as clear when investigating behaviour’. The FDF (1996) found older people cook and store food correctly more often than younger people. Griffith et al (1998) found no such correlation with age, class or education. McCarthy et al (2008) identified, among a sample of Irish men and women, two key groups at risk due to poor food safety practices in terms of storage, preparation and cooking. These were young men (18-24) and older men (65+), with low levels of educational attainment also associated with poor food practices.

6.2.5 Food safety communication

The FSA and other bodies can learn lessons about optimising communication methods, content and strategies from a number of recent studies.

According to a Eurobarometer study (Eurobarometer, 2006), overall, there is a strong level of confidence in the actions that public authorities take in the field of food safety with almost half expressing satisfaction with the role of authorities in informing the public about food-related risks. In terms of promoting health messages, most individuals recall having seen or heard media reports on risks associated with smoking, obesity, alcohol and infectious diseases and over 60 per cent of consumers recall reading about unsafe or unhealthy food within the past six months. Of interest, however, is whether media reports about risks translate into changed behaviour among consumers. Of those respondents who were aware of media reports, more than half claimed they had changed their eating habits as a result and either avoided specific foods temporarily (37%) or permanently (16%). Large minorities of consumers admit they ignore public messages relating to food safety however - over 40% of people do not change their behaviour despite being worried. Various explanations for behaviour inertia have been discussed above. This apparent resistance to food safety warnings has implications for government communication strategies. If, as discussed above, individuals are characterised by ‘optimistic bias’ , for example, and tend to view others as more at risk of danger than oneself, this will translate into inactivity despite health messages warning of risks.

With some risks, trust is important. Despite anxieties or concerns with food scares for example, if trust is high, consumption will not be affected. If the public feels that legitimate concerns are being inadequately addressed by risk-management processes, then intensity of public concern with a risk i.e. ‘outrage’ will escalate. Under these circumstances, regardless of the degree of hazard associated with a product the perceived risk will be high (Sandman, 1987). Therefore, Van Cleef et al (2009), in common with previous studies, highlight the importance of;

- Risk management transparency
- Proactive risk management strategies
- Effective communication and
- Evidence of competent and honesty among regulators and institutions

6.3 Cross cutting issues

This section identifies cross-cutting themes that arise from the previous sections and which have general methodological implications for the collection of quantitative data on the influences on food choices and perceptions of risk.

6.3.1 Analytical frameworks

To what extent do individuals appraise their food consumption and preparation practices in terms of risk and other concerns, such as health? In practice, neither choosing food nor the appraisal of food risks are routine endeavours. Most people, most of the time, do not weigh up the costs and benefits of particular choices in a considered manner. Instead, ‘short cuts’ and rules of thumb are typically used in a non reflexive manner and are embedded in the routines of everyday life (Ioannou, 2005). A purely psychometric approach to either food choices or risk perception would not adequately capture or explain this ‘decision making’ context (Bunton et al., 1991).

Influences on food choices

As discussed above, food choice is a problematic term as in reality it covers a range of different food choice decisions extending from purchase or acquisition through consumption and possible disposal. Also, as noted in the PSI Scoping Study (2009), food choice behaviours and decisions are often low-saliency and routine. For instance, in the Low Income Diet and Nutrition Survey (Nelson et al., 2007), price/value/money were the most commonly cited influences on food choice followed by concern for the quality or freshness of foods, but as Dowler (2008) observes qualitative studies tend to yield different findings and that this may because “everyday” background influences, such as location of shops or canteen provision, are not “perceived” as overt influences. Both capturing and disentangling the nexus of factors that influence food choices present a considerable challenge and any survey questions thus need to be as specific as possible. The ability of surveys to capture influences on different types of food choice decision is likely to be variable and the PSI scoping study concludes that survey questions are more likely to be successful in eliciting influences on purchasing decisions (PSI, 2009).

Risk perceptions

In focus group discussions, designed to elicit opinions on food consumption and BSE in particular, attempts to encourage discussion of risk and food safety met with resistance (Green, 2009). Repeatedly, participants 'deliberately shifted the topic or reframed discussion – they preferred to use other domains of knowledge. Some said explicitly that they did not know about safety or risk, but preferred to talk instead about nutrition, cost, pleasure. The issues were not thought about in terms of risk and safety and risk was not largely a concern to them' (Green, 2009).

Crudely, much risk communication assumes individuals will behave 'rationally' and responsibly if they knew all the facts. Hence individuals are thought to 'over-react' to 'officially designated minimal risks' while some 'hazards fail to motivate protective behaviour despite official warnings' (Pidgeon et al., 2003). Such 'deficit' perspectives are criticised, however, as ignoring the wider range of considerations in reasoning processes than technical experts deploy. Horlick-Jones and Prades (2009) look instead at an alternative approach – interpretive risk perception. They suggest that, in methodological terms, questionnaire based research alone cannot capture the complexity of risk perception in specific hazard locations, suggesting that methods more sensitive to context are needed" (p411).

Draper et al (2005) suggest that given the uncertainty associated with some risks, the sheer volume of risk alerts and the extent to which 'expert' advice is in conflict, the public's approach to food choices and 'risk assessment' is entirely rational, involving the balancing and weighing up of competing criteria.

6.3.2 Trade-offs and interactions

Additional to the challenge of both defining and measuring influences on risk perceptions and food choices, is the difficulty of capturing interactions between these influences and the trade-off of one concern against another.

There are many potential risks in relation to food that can have an impact on immediate health (from improper cooking, hygiene or storage) or on long term health (from insufficiently good nutritional choices). These risks have to be balanced and also set against other benefits (pleasure, optimal nutrition, cost savings) and necessity (we have to eat) (Green, 2009). The qualitative work described earlier, on perceptions of food safety risks, found that food choices were discussed in terms of a number of competing discourses around taste and pleasure, health and nutrition, socialising and hospitality, convenience and kinship most of which had a higher priority than safety. Cost was the one exception where safety was seen as a quality of food explicitly opposed to cost, with low cost perceived to be an almost inevitable trade-off against both quality and safety. Cost, however, is an important consideration for many groups – either they can't afford what they see as most safe (e.g. organic meat) or the most healthy (Draper et al, 2005). Only a few small scale studies have attempted to unravel the relative importance of availability and entitlements versus factors such as nutritional knowledge and budgeting or cooking skills.

The issue of trade-offs was also raised during the expert interviews with one noting the tensions between health and taste, which may or may not be played out at the conscious level and the additional choice of quantity;

> "[individuals] make choices about whether they're going to eat what they would regard as something that's healthier versus less healthy, and it's often simultaneously true that the less healthy one is more palatable or attractive, so that's a common choice people make, probably epitomised in their, am I going to have fruit or …a cake for dessert or fruit or crisps for snacks... that's often a sort of parameter in their choice, so then they make choices about amount....they debate about whether they should have a large portion or a small portion, or a second helping or not a second helping, so that's another choice I think people quite often make .... quantity and type"

7. Focus group synthesis

The aim of the focus groups was to explore the various factors that influence people's food choices, their perceptions of food risks and reactions to a number of food health campaigns. These research areas were explored through group discussions and a number of exercises which included testing certain scenarios and showing participants some FSA adverts.

The discussions enabled us to explore the salience of health considerations and investigate behaviour change, looking at triggers and obstacles. The following broad themes emerged;

- Influences on choices
- Trade offs
- Triggers for dietary change
- Obstacles to dietary change
- Perceptions of risk
- Views on food safety and health campaigns
- Views on the role of government in relation to food safety and nutrition

The focus groups revealed that individuals were quite comfortable discussing the broad influences on their food choices in a generalised way. Perspectives adopted considered eating patterns over several days or weeks and many individuals therefore perceived themselves as achieving a healthy balance over the longer term. Less healthy foods were deemed acceptable ‘in moderation’ or if ‘offset’ by physical activity. Individuals did acknowledge that much of their behaviour was habitual, but were clear also of the range of factors that were taken into account at each mealtime, including; cost, convenience, health, ethical concerns and, above all, taste. How individuals prioritised these different influences and the trade-offs they made, were then context dependent.

The focus group findings were therefore broadly consistent with previous studies identified in the literature review – choice is complex, context dependent and with competing influences. Any policies directed at changing behaviour therefore face a number of challenges and need to be directed at the levels of demand, supply and the various components of each.

The focus groups were useful in confirming the findings from the literature review and in familiarising the researchers with the language used by respondents in discussing the two topics of interest. The topic guides were designed to cover areas not explored in detail in the literature.

Findings from the focus groups

In the discussion below we attribute quotes to individuals in the four groups as follows;

Rural (SW), older	→	rural group
London, higher earners	→	affluent group
London, unemployed and low earners	→	deprived group
Urban Midlands, Asian and White British mix	→	urban group

Influences on choices

Taste is a priority
In all groups, when thinking about what influences their food choices, participants prioritised taste above all other considerations such as convenience, cost and health. However, participants also said that they preferred the taste of food that was good quality, fresh and ‘healthy’. Participants spoke of enjoying fresh fruit and vegetables because they like the tastes rather than because these are healthy options. Participants said that as they got older their taste changed and they preferred healthier food, other participants had always preferred the taste of healthy food.

Quality
A concern with ‘quality’ permeated the discussions and participants criticised the taste of low quality food like ‘factory chickens’. A range of participants – although mainly from the affluent group – spoke of shopping for quality in places like Waitrose and buying organic, wholesome, fresh foods. A participant in the urban group was

also influenced by quality and would only buy organic meat. Cost was strongly associated with quality with suspicions voiced that very cheap take-away chicken from some outlets was inevitably an inferior product that should be avoided, with concerns, for example, about hormones in the food. Similarly, cheaper end foodstuffs from supermarkets were also shunned by some participants;

> '*I wouldn't pick up anything in a supermarket that said 'economy*.'' (Man, urban group)

Listening to cravings

Participants spoke about having certain urges and needing food. Others spoke about *'listening to their bodies'* so ate what their bodies requested. In the older rural group one participant was very focused on his cravings for red meat which led to him eating steak at least three times per week. Female participants spoke about craving chocolate or red meat;

> *'Sometimes my body actually craves it, I buy the chocolate and just have a little bit it's like I needed it, my body tells me what it needs, if I eat something healthy my body is saying, okay today you're going to have salmon or whatever, my body tells me what it wants, I tend to listen to what my body says.' (Female, deprived group)*

There were participants who explicitly acknowledged the influence of their emotions on food choices and their need to sometimes improve their mood by means of a treat;

> *'Sometimes your feelings, your emotions tell you that you need something like that to cheer yourself up' (Women, deprived group)*

Eating a balanced diet

Participants in all groups spoke of the importance of choosing a varied diet. Those with children were particularly aware of the importance of achieving a balanced diet. One participant explained that she chose food in terms of what her children had recently eaten to ensure their diet was balanced. In the following quote she explained the importance of ensuring dietary balance for her children:

> *'I try and make sure that they have a well balanced diet and that they eat proper meals and don't snack too often. If they're having a proper, what I would class as a proper cooked well balanced meal….Well whether it would be rice or pasta or a roast, you know, a proper balanced meal with vegetables and, you know, your proteins, your carbs and all the rest of it…'.(Female, urban mixed ethnic group)*

Health awareness

In both the deprived and affluent groups there were participants who were health conscious. There was a general understanding amongst participants about what constitutes a healthy diet and there were participants who were keen to opt for healthy meals:

> *'It's just got to be healthy, there is no point when you're at home and you've got time, for me it's just the healthy option always'. (Female deprived group)*

In the urban group health came up because one participant was on a diet and another had health problems. The following quote illustrates how health problems influence food choices:

> *'I'm anaemic and my son's anaemic and we try and eat a lot of iron ... stir fry with spinach in, vegetables ... and plus I've got an underactive thyroid so I have to eat sensibly because otherwise it takes ages for me to burn it off. So I'm supposed to be eating very lightly. (Female urban group)*

The rural group participants spoke less of health and more of eating fresh food because it tasted better. In this group, one participant mentioned the importance of 5 a day. Others explicitly acknowledged concern with the fat and salt content of meals;

> *'..for a while was doing ready meals all the time, just go to Marks & Spencer's and buy some because at the petrol stations you can get them, but then I realised that is higher in fat and salt than just getting chicken and chips so I might as well just get that.' (Woman, deprived group)*

> *'Dixi Chicken is everywhere.... once I've had them I usually feel sleepy,... you become lethargic, it's true. I think that's across with all junk food. You're taking a high intake of either fat or calories or carbs or sugar or whatever.. It's got high sugar, high salt.... during the days you look at your meals, you have salt and stuff like that, you look at the back of a packet of crisps I think one bags is like twenty-five percent of your recommended daily allowance of salt or something. Four packets of that and you're done for the day*.' *(Women, urban group)*

The impact of tradition

Participants acknowledged that their food choices were influenced by the way they had been brought up. In particular the rural group – which had older participants – spoke about eating what their parents ate. For example, they referred to their tendency to have meat and two vegetables. One participant spoke of eating what his family ate as he was growing up. The following quotes illustrate the importance of habit and food choices handed down from parents;

> *'My mum would do steak, chips, Greek salad and French stick, the lot ..it was always meat to me, I like the meat I do. (Male, rural group)*

> *Fish, chips and peas... It's something I'm used to having and I had it when I was, you know, growing up and I sort of stayed with it and I do enjoy that meal. (Male, urban group)*

'I also like to prepare food from nothing, like fresh, tasty food ... I come from that kind of a background, that's what I was taught as a kid.' (Woman, deprived group)

'It's an every day thing for me. ..my mum used to do puddings every single day'.(Woman, deprived group)

Older participants grew up after the war so said they were more sparing with food. They did not like wasting food nor did they believe in use-by dates. For example, one participant would roast a chicken, have it cold the next day, have chicken sandwiches the day after and on day four would make a soup with the remainder.

Influence of others and special treats

Family members are a key influence on food choices and as family structures alter over the life time so do eating habits. In some cases, food choices were influenced by the preferences of children, grand- children or partners. Participants admitted to eating bad foods for family members. This meant that they would eat things they did not necessarily favour. The following quote illustrates how in some cases parents would opt for fast food as a special treat:

'Sometimes we'll go and see a film at the weekend and nip into [X], it's a little treat for them' (male affluent group)

For others, the fast food option was not regarded as a treat so much as an occasional necessity for reasons of convenience.

There were other examples of the influences family members have on food choices. A participant in the rural group spoke about making an effort to make a roast because it made her husband happy. A mother in the urban group made food choices in accordance with what was healthy and nutritious for her children.

There was a perceived hierarchy of bad foods. There were participants who differentiated between the quality of different 'fast food' outlets. A father spoke about going to pizza restaurants because his children liked them. However, he would not go to certain restaurants, opting instead for more up market choices. Others commented on eating pizzas only from certain pizza restaurants;

'We went to [X]… They do half decent pizzas, they're properly cooked pizzas, they're in the oven in front of you and they're quite healthy in pizza terms because they come with a salad and nice little bits and bobs on, they're either doing their marketing very well or their food…but they feel like proper Italian pizzas rather than big stodgy things that you get in [x] or whatever' (Male, affluent group)

Trade offs

While participants discussed their food choices in relation to taste and the importance of healthy eating, trade-offs were made both in the short and long term. Examples of trade-offs included; paying more for quality, eating less healthily for convenience or for family members and risking safety for cost. Individuals tended not to compromise on taste preferences however – participants did not discuss disliking a particular food but eating it anyway because it was healthy.

Participants discussed eating foods that were less than optimal for reasons of convenience, due to cravings or to keep family members happy. In other instances participants were prepared to pay a premium by shopping in more expensive supermarkets in the belief they were purchasing better quality products. In one instance, having paid more for some organic meat, a participant observed that she would ignore the use by date – perhaps risking health. For others, trade-offs were made over a longer time frame with less healthy food consumed on occasion offset by more healthy choices at other mealtimes.

'Junk food'[15] in moderation

Participants admitted to eating 'junk food' but would then suggest that these less healthy options were used in moderation. They were aware that these foods were unhealthy, but as they perceived themselves to be eating well most of the time, felt it was acceptable to eat bad food once in a while.

> *'Everything in moderation is the key really because you can do that, you can have both sides of the fence if it's in moderation' (participant, Affluent group)*

For others, a longer time frame was taken into account with one participant observing, in relation to crisps and other less healthy products; '*I go through phases of actually eating stuff like that*'.

For those who enjoyed junk food, there were participants who spoke of eating them in particular contexts. For example, participants discussed the pleasure of eating chocolate when watching a film, eating biscuits with a cup of tea or eating junk food 'after a few pints'.

Other participants avoided junk food altogether because they did not like feeling sluggish afterwards. As one participant in the rural group explained, he would not eat unhealthy food because he felt that the subsequent damage outweighs the temporary pleasure;

> *'Especially those cakes there with the icing on and the colourings and the fat that's probably in the doughnuts and all the rest of it, for the instant that it*

[15] Participants widely used the term 'junk food' with reference to a range of take-away meals and foods such as KFC, McDonalds, fish and chips, some pizzas and kebabs.

gives you, the amount of collateral damage that comes with it, it's just not worthwhile.'(Male, rural group)

Attitudes to puddings varied. While participants admitted to enjoying puddings, others did not. Whether or not participants ate pudding mainly depended on their taste preferences rather than on health issues. For other participants there were tensions between their affective and cognitive decision making processes with individuals well aware that many of their food preferences were not healthy. One woman described how 'careful' she had to be because she is 'greedy' for chocolate. Others complained of the difficulty in resisting two for one offers in supermarkets which all too often would apply to unhealthy products such as crisps and doughnuts.

In order to indulge their preferences for less healthy sweet food, participants altered their diet in other ways to achieve balance over the day;

'I will eat healthy for the whole day just to save all my calories for that pudding' (Woman, deprived group)

Taste versus convenience

Participants indicated that taste and liking certain foods highly influenced their food choices. However, there were situations in which they had to make certain tradeoffs and chose convenient quick foods instead of tasty or healthy foods because they lacked time or had other commitments such as sport or exercising;

'I've chosen a sandwich, I would do because Thursday nights I play football, I get in quite late from work and it's a really quick rush and I get a really quick and light, because I know a couple of hours later… it's convenience, it's quick to do, it's light, it's functional' (male participant, affluent group)

Balancing good with bad

The concept of balance emerged frequently in discussions, in the sense of offsetting good food at some mealtimes against unhealthy choices at other times. For example, a participant in the deprived group was conscious of balancing the bad food she ate at work with healthy food when she was at home. Another participant attempted to achieve balance within meals so would eat pizza with salad, thereby balancing healthy and unhealthy choices.

One participant tried to counterbalance 'stodgy' school dinners with cycling to work. After a while he realised he had been 'fooling himself' so he replaced the school dinners with sandwiches. One woman who wanted to buy organic at all costs was prepared to ignore 'sell by dates' to counterbalance the cost of buying more expensive food.

Environmental/ethical concerns were limited
The discussion groups explored whether people would make tradeoffs when presented with environmental or ethical concerns. On the whole, participants did not show significant concerns when it came to these issues.

In the rural, urban and deprived groups there were no, or minimal, environmental concerns, although there were participants who showed an interest in animal ethics. In the affluent group there were mixed views. Participants were asked what they thought about eating fish at risk of extinction, such as cod, but little concern was expressed. The more common view was that if food was already on the shelves of supermarkets then someone else would eat it anyway. One individual responded to the suggestion that a particular fish stock was at risk by stating that he would therefore eat more while he still had the chance.

Triggers for dietary change

There was a range of reasons why participants had changed their diets, including; job loss, health problems, children leaving home and attitudinal change associated with ageing.

Financial problems had meant that participants had changed their diet. For example, as the following quote demonstrates, one participant who recently lost her job became more economical and threw away less food.

> *'Normally I would throw those out, six months ago they'd have gone in the bin... We were having a family and different things, I was made redundant .. it's taught me to be more sensible with what I spend and buy' (Female, affluent group)*

Participants admitted going on diets for weight reasons. One participant in the urban group was currently on a diet because he had recently put on weight. This meant that he chose food in terms of its calorie content. Ironically, he was eating a lot of ready meals because he found it easier to determine their calorie content.

There were participants that had special diets for health reasons such as; an over active thyroid, diabetes or high cholesterol. A possible threat of losing work meant that one participant was forced to lose weight in order to retain his lorry driver licence.

Participants recognised that as they were getting older they were becoming more conscious of looking after their health by eating less fat and salt.

'I think as you get older you start thinking about heart problems. When you're younger you can eat ... you're fairly invincible and you feel like you can beat anything whereas as you start getting older and you start maybe putting on a bit of weight. (Male, urban group)

'I like just about everything but try to stick to the more healthy options. You have to when you get a bit older' (Woman, deprived group)

Participants spoke of changing their diets when their children moved out of home. Having fewer mouths to feed meant that people were able to change their diets, sometimes choosing more extravagant food. A participant in the affluent group explained that when she had to feed a lot of people she never cooked steak because it was expensive.

'I used to feed the 5000, now I just have to feed myself so my eating habits have completely changed and I'm having steak because I can and also that need for red meat sometimes, I don't allow it myself that often but you sometimes get a bit of craving for a bit of blood, so yes I can do things like that now that I didn't used to be able to do because I'm not thinking of anyone apart from what I want. (Female, affluent group)

Obstacles to dietary change

Generally participants did not recognise a need to change their diets. On the whole, participants recognised that they did eat unhealthily at times but felt that overall they achieved an acceptable dietary balance and ate 'junk food' in moderation. Where the need to modify eating habits was acknowledged, a range of constraints were cited as problematic, including; taste preferences, the food that was available to them in particular locations or at particular times of the day, the constraints of time in busy lives in terms of preparation requirements for more healthy options and the cost of some foods**.**

Taste preferences and 'control'

Participants who were strongly influenced by taste seemed to struggle to change certain habits. Others said that they could not change their habit of eating red meat because they did not like the taste of other healthy alternatives such as fish or salad. There was one overweight participant who was reluctant to change his eating habits because taste was very important to him. He openly admitted that he had tendencies to being tempted by food and overeating. Another participant said that he would rather live a short and enjoyable life than live a longer healthier life;

'I mean wouldn't you rather live like seventy years of really enjoying your life carefree than ninety years of not quite enjoying it?' (male, Birmingham group)

A further factor preventing some individuals from changing their diet is ‘control’. While some participants were in charge of their food choices, others had to eat what others dictated. For example, there was a participant, in the affluent group, that eats curries on a regular basis because that’s what her partner cooks.

Convenience and availability

Convenience posed a constraint on the choices of participants in all groups. Participants choices were limited by what food was available where they worked, for example at school or other canteens. Other participants regularly ate processed microwavable or junk food because their jobs meant they were often ‘on the road’ where choice was notably circumscribed;

> ‘*You can have pizza, you can have chips, you can have kebabs, you can have burgers and that’s pretty much it. When you finish a show, that’s all that’s open’*. (Woman, deprived group)

Participants who wished to change their diets for the better felt that they could not because healthy food was not readily available. For example, one participant that had to eat fast food at work was aware that it was unhealthy but felt powerless to change because there was little else available; ‘*every day they are opening a new chicken place’* (Woman, deprived group)

Participants spoke of choosing food that was ‘easy’ and ‘quick’. The reasons for this varied; in some cases habits influenced choices. Generally, participants had the habit of having quick and easy meals at lunch time and made more effort with evening or weekend meals. Others with children were keen to make quick and easy meals due to time constraints;

> *‘Time is an issue sometimes. Yesterday time wasn’t an issue so I could prepare it quite enthusiastically whereas sometimes lunch I’ll be somewhere where you’ve got to have whatever is available’ (female, deprived group)*

Cost conscious

Participants mentioned cost and time are important constraints to making healthy choices. In the deprived group, even though participants were not openly talking about the cost of food, this came out through their views on food choices. They spoke about being on a budget and complained about the fact that unhealthy foods were cheaper.

Participants spoke about how their food choices were influenced by supermarket marketing strategies. The deprived and rural group spoke of being tempted by offers and cheaper food. They recognised that purchasing products on special offer meant at times choosing unhealthy foods;

'The trouble is you do get distracted by offers from the supermarkets, they're very crafty, two for one and "here we go", I might go into that shop with my missus, go in for a couple of loaves of bread and come out with a trolley load! (Male, rural group)

One participant that had to eat out a lot because of her work complained about the cost of salad. Generally, the cost of healthy options was restrictive but financial resources were a complex factor with many acknowledging that if cost was not an issue they would in fact have far less healthy diets. The influence of cost on eating patterns therefore strongly interacts with attitudes to food and knowledge. When participants were asked if winning the lottery would impact on their diet, there was consensus that it would. Participants indicated that if they won the lottery they would exercise more and eat better quality food - fresh, organic and healthier. Others would choose a macrobiotic diet, others would pursue health and quality;

'if you got more money you would go for the premium and healthier stuff' (woman, urban group)

'I would get someone to do just a purely macrobiotic diet for me and I would just be so healthy and so wonderful' (Woman, deprived group)

On the contrary, others felt that they would eat more expensive and richer food like lobster, or eat out in restaurants more often if cost were not an obstacle. Restaurant take-away meals are often high in salt and fat and a participants noted they would eat more of this type of food if cost was not an issue;

'I might have a takeaway, a Balti or a Chinese. .. I couldn't afford to have takeaways all the time. I would if I could. I certainly would. .... More restaurants, more curry shops ... not a healthy way. It would finish me off' (Male, urban group)

'I would just be queen of luxury. I'd end up being a fat Roman, everything from breakfast to … I'll have oysters for a snack, while I'm in the bath, I don't care, I would literally be huge'. (Woman, deprived group)

Perceptions of risk

During discussions, spontaneous identification of food risks tended to revolve around food poisoning, fat and salt content of food. Concern with other risks such as pesticides, GM foods and BSE were voiced less readily if at all.

Although the main food risks participants identified were related to food poisoning, the participants in the rural and affluent groups were very sceptical of use-by dates. Both groups agreed that they would eat a steak for example if it was a few days out of date. They knew how to check if a steak was off.

'I don't believe in sell by dates…It's another obsession, my children homed in on sell by dates and it would be like their mouths would be completely taped, so I used to have to tear off or make sure they didn't see sell by dates because it's a lie, it's all a lie' (female affluent group)

In the affluent group, participants trusted the food safety when it came from supermarkets which were perceived as better quality and were more distrustful of fast food chains. The food was seen as low quality, unhealthy and more risky. Participants were focused on the fact that these foods were bad quality rather than on health factors such as fat and salt content.

The deprived and urban groups had mixed views about use by dates – some would not eat meat or chicken that was out of date while others would smell it before deciding or cook the item very well. Perceptions of risk in relation to the safety of food differs according to the food group as highlighted in the following quote;

I could pick a strawberry and then cut the top and the rest of it is fine because it hasn't gone all the way through and I'll eat that. So not I'm saying I'd scorn it just because it's got a little bit of gone off at the top, I'll just cut it off. Even with potatoes, more with the fresh like carrots or whatever I'd probably cut off the end but with food like bread or the mouldy or fish, that's just a no-no. I will eat meat if it's a day or two out of date and it's in the fridge and I smell it's okay but fish I wouldn't. (Woman, deprived group)

There were participants who regularly bought food that is reduced in price having reached a use by date. In the deprived group participants were more concerned about the risk of food poisoning when eating out in restaurants, especially where cheap buffets were on offer with food out on display for long periods of time.

Various participants noted that obesity is a food related risk. The following quote demonstrates one participant's view on this health risk:

'Obesity… The stuff that people put inside them and not understanding that feeding their children processed food every day of the week, because it's convenient and I do understand why people do it, most families, both parents are out working and .. it's easy, just to stick something in the microwave or the oven that's already done for you, but you just ... it's got to have an impact on them, their ability to learn and their development.' (Female, affluent group)

Views on food poisoning campaign

All participants were shown adverts highlighting (a) the risk of using the same chopping board for meat and other foods and (b) the risk of incorrectly cooking a Christmas turkey. Participants generally liked these adverts and felt they were powerful and informative. The turkey advert was particularly well received as it was humorous. On the other hand, others felt that the humour element made it easier to dismiss. Some liked the advert about the chopping board because they felt it was more factual and shocking. Others felt that the chopping board advert was boring and less effective because it was not humorous.

Participants already understood and knew about food poisoning, although some said that the adverts taught them something new. There were participants who resented being lectured to.

The older participants said that these types of adverts are for younger generations who know less about cooking. The following quote illustrates how a mother perceived her daughter’s cooking skills, commenting on her not knowing how to defrost a chicken before cooking it:

> *‘if I said to her “how quick can you cook a chicken from frozen?”, she’d probably say “just chuck it in there, defrost it in the microwave, it will be all right” sort of thing.’ (Female, rural group)*

As discussions developed, participants took the view that health warnings can be exaggerated and that a certain level of germs to build your immunity is necessary.

Views on salt/fat campaign

The adverts highlighted gaps in knowledge and scepticism in relation to some health messages. While the humorous food poisoning adverts were well received regardless of age, gender or background the health campaigns relating to salt and fat, by contrast, evoked a more negative response. Participants expressed concern that while the latter advertised the dangers well, they did little to help people change their behaviour and failed to adequately instruct or advise on how diets might be improved. There remains considerable scope therefore to improve some health campaigns.

The saturated fat advert was more popular than the salt advert. Participants felt that the saturated fats advert was very effective because of the shock factor. The salt advert did not make much of an impression on participants.

There was criticisms of the fact that there was no conclusion in either advert. The adverts did not indicate what you were supposed to do next. Some criticised the fat advert for leaving you in fear and only giving you a web address to check what to do next. The salt advert was also criticised for not explaining what happens if you ate too much. Both adverts were said to lack a 'call to action' in terms of informing people of what is the correct behaviour they should follow;

> *'What the message is but they don't actually mention… what actually do you want people to take…that's weak' (Male, deprived group)*

The rural group were particularly dismissive of the salt message, with some participants adopting a stance of denial and rejected the idea that salt and fat is bad for you. Participants expressed the view that one needs to eat some salt and fat hence reinforcing the view that moderation is key;

> *'if you have too much salt this is going to happen ... that's going to happen' ... I don't know how much truth is in all of it, you know. It's bad for you but how bad is it, you know, how bad really is it? (Female urban group)*

> *We all know we have to have salt every day to live really and we just assume that our salt ration every day is in the food we eat and it generally is, isn't it? What we put on is extra and you do need to put it on for taste don't you?' (Female rural group)*

Views on role of government

The focus group participants felt that the government has an important role to play in relation to food safety and longer term food risks. The view most commonly expressed was that government should go much further than hitherto, with a need for bolder interventions, such as changes in school meals, changes in planning, controlled licensing of food outlets in high streets and tighter regulation of food content.

Participants agreed that the Government had a role to play in promoting healthy behaviour. Participants complained about the range of conflicting information about food. For example, one participant commented how for years one was told that fish was healthy and now certain fishes are said not to be healthy because of the mercury levels found in them.

In the affluent group it was felt that the Government should do more to restrict 'fast food' licences. However, in other groups, participants felt that the Government was not responsible alone – individuals had to ultimately decide to make healthy choices;

'I don't think it's their direct responsibility, I think it's their role to sort of like bring it to your attention, it's up to individuals to make the choice isn't it? (Male, urban group)

The Government was said to have an educational role for those who needed to be educated. The affluent group felt that they already knew how to lead a healthy life but that many less educated people could benefit from these campaigns. A mother in the urban mixed ethnic group said it was important that the Government influences school dinners so that they were healthier and more balanced. In the rural group, composed of older participants the view was expressed that it is important that younger people are educated by these types of campaigns.

8 Methodological considerations

In this section we discuss the methodological limitations associated with survey based food choice research in order to identify which issues cannot effectively be explored in full by such means and to warn of potential pitfalls when designing surveys for the purposes of food related behaviour. Individuals are influenced by a wide array of psychological, cognitive, affective, social, institutional, economic and cultural factors, many of which may not be stable and which will also be context dependent. Given this complexity and the fact that many influences on behaviour are habitual, non-reflexive and of low salience, the scope for surveys to explore food related attitudes, perceptions and behaviours is significantly circumscribed. That is not to say that surveys are futile, they continue to shed light on important aspects of behaviour but it must be acknowledged that they are unlikely to reflect the full complexity and indeed ambiguity of the attitude/ behaviour interface and may be prone to errors of measurement. A number of particular problems arise in designing questions for surveys about food choice and food risk[16]. Consideration must therefore be given to the following issues, which may have implications for either methodological approach, question wording, question preambles or question layout/approach;

- **Conditioning** - individuals completing records of their food consumption may become more aware of their need to eat healthily and therefore change their diet accordingly.
- **Social desirability bias –** respondents are often reluctant to admit to behaviour or attitudes they feel may be judged as morally wrong or foolhardy. Topics such as crime, alcohol use, drug taking, sexual activity, how children are raised and, to some extent, personal eating habits are particularly

[16] Many of which are discussed in Morris (2010)

sensitive topics. Questionnaire mode strategies designed to limit social desirability bias include: use of open questions, use of long questions with a sensitively worded preamble; use of deliberately loaded questions implying certain behaviours are commonplace or use of self-completion.

- **Measurement of low salience behaviours** – food-related behaviours are likely to be of low salience to respondents who purchase and consume food in an habitual manner often with little conscious, rational thought. Such processes are not readily conveyed by means of survey instruments and may risk post hoc rationalisation by respondents.
- **Telescoping** – there is a tendency for respondents to over-report some behaviours when it is hard to recall their timing due to low salience. For example, a survey question may ask a respondent to report the number of pieces of fruit consumed over the previous 24-hours. The respondent may recall that they consumed several pieces of fruit in the last week but not remember precisely when and may therefore claim to have consumed it in the 24-hour period the question is concerned with.
- **Response bias** - energy intake tends to be generally under-reported, in particular by women, older people, the overweight, those with literacy problems and those suffering from depression.
- **Knowledge questions** - Respondents can find such questions threatening – particularly when they have little knowledge of the subject. As a consequence guessing or ‘over-claiming’ can arise. Questions can be worded to make them less threatening and ‘don’t know’ responses can be presented as acceptable.
- **Question location, order effects** – this is an issue that applies in all surveys but is of particular concern if asking respondents if they are concerned about, for example, various aspects of food safety. If preceded by many questions about health or knowledge of new food technologies etc then a respondent may be more likely to express concern about safety.

Experts felt that there was a place for surveys but that it was dangerous to rely on survey data in isolation. Several stressed the value of combining different research methods. In relation to food choices, it was suggested that basic information about purchasing behaviours could be obtained using ethnographic approaches, diaries or, if possible, supermarket loyalty card records. There are limitations associated with loyalty card data, however, given that households tend to make purchases from several shops, many of which do not use loyalty cards. Other industry sources may therefore be more suitable in providing robust information on household purchasing behaviour. One commented that ideally both quantitative and qualitative methods should be used for triangulation and further that theory/theories should be used to underpin examination of food choices and risk perceptions, for instance psychometric decision-making models

Eating behaviours (and, according to some experts, purchasing behaviours) were said to be best investigated by an “observational” or “ethnographic” approach and that these can capture what people actually do in their own home. Focus groups were also suggested as an option to access the processes by which people make food choice decisions and also trade one thing off against another, possibly by using scenarios. They could be used either for question design or retrospectively as a diagnostic. Similar points were made about research into how perceptions of risk influence food choices. One expert pointed out there were “methodological challenges...it is incredibly difficult to get accurate measures of food intake and the more accurate you get, the more artificial you get, so you...lose ecological validity when you improve the...basic validity of the data”. Another said that her “ideal project” would deal with this problem by triangulating food frequency questionnaires with “more qualitative ethnographic methods”. One expert, acknowledging that genuine ethnographic methods were not always feasible, believed that the best alternative would be to conduct group discussions while participants were engaged in food-related activities such as shopping, cooking or eating. Some experts, however, felt that observational approaches were more effective than diaries, interviews or focus groups because they did not rely on respondents being literate or articulate. One felt that any study involving detailed recording would lead to a “pretty odd sample” because the vast majority of people would not want to take part.

It was also observed during the expert interviews that cross national research can be very helpful in shedding light on national practices and cultural relativity relating to the manner in which research is framed;

> “the other gap is probably more cross cultural or cross national work, because there hasn’t been that much cross national work, and food is so definitional of local and national cultures … and that would probably just give us a little bit more analytical distance on how people think about food if we did a bit more comparative work, rather than, because otherwise the problem of us doing work on British views of food risk is that we’re so bound by our own cultural assumptions, we can’t often think outside of it”

In terms of the suitability of methods for different population groups, some experts commented that while they did not consider survey questions were limited in their transferability across income or age groups, but that this might be an issue with ethnic minorities. However, they did consider that methods to gather data on actual food consumption needed to be tailored to particular social groups.

In appendix 4 we set out, in tabular form, the pros and cons associated with different methodological approaches to studying food related attitudes, perceptions and behaviour – these apply to food choices and perceptions of risk. In section 8.1 we look at each question the FSA would like addressed and suggest approaches that might be taken in a survey while acknowledging limitations.

8.1 Questionnaire development

Table 3: Question specific methodological considerations – Food Choices

Question (from ITT)	**Limitations** **(Purple indicates that a Focus Group is recommended)**	**Potential approaches**[17]
Which factors influence food choices? Want to know how these factors interact and affect choice 'to bring about positive dietary change'. So of interest is hierarchy of choices and trade-offs.	The Food and You survey already contains questions on which foods are purchased and which food groups eaten and how often. This approach sheds light on dietary behaviour but does not indicate influences on these choices. The question is too vague. Which particular choices, which food groups, which contexts? **Need to pin this down a little more.** We know taste, cost, convenience, habit, ethics and risk perceptions all influential) Accompanying people shopping (observation & discussion techniques) most direct way to understand purchasing decisions.	Some questions in FIS I are too vague to understand specific choices, eg. *Some people may find it difficult to eat more healthy. Can you tell me please, what do you think would be the difficulties, if any, for you in trying to eat more healthily?* Instead, a more specific question might be helpful. Eg. for those who do not eat 5 a day can ask: *Health experts recommend 5 portions of F&V a day, you say typically you only eat X portions. Why do you not eat more F&V?* (options then might include, cost, too busy, taste reasons, don't think about it, due to partners/children's preferences, etc)

[17] N.B There may be potential limitations to these approaches which require further consideration when topics are being developed.

	Need to be clear here whether FSA interested only in eating. Purchasing and eating are different, hence literature on waste and disposal. Point of purchase also an important focus though – eg. to what extent do food labels etc influence purchasing in a context of hurried shopping practices As FIS is a survey of individuals FSA are interested in eating rather than purchasing behaviour as respondent purchasing behaviour could be affected by others in the family.	
Do individuals prioritise between potentially conflicting choices and how are trade-offs reached?	Conflicting choices include - Taste, price, convenience, healthiness, ethics. This will be highly context dependent with some choices varying on a daily basis (perhaps changing with mood? and depending on whether eating in or out or whether entertaining friends or whether cooking a family meal vs only for oneself. How stable are choice priorities and if not stable how often and in what contexts do they change?) The context dependency of 'choice' is a challenge for a survey. Will have to pin questions down to specific choices in specific contexts.	

	Can use FG to explore extent to which individuals have changing priorities in different circumstances and how trade-offs reached (is it explicit in mind of respondents?) (Dowler (2008) - what people give as reasons for choice in surveys and qual studies often differs. In survey tend not to acknowledge structural constraints such as limited choice in local shop with no transport to access larger supermarkets)	
Do influential factors differ across sub groups (eg. age, ethnicity, religion, gender, region)	As above	
Do factors change over time? Any relationship between age and food choice may reflect differences associated with cohort or ageing, these must be		To capture this could ask individuals how their eating habits have changed over time. Food and You already asks about change over past 6 months. Additionally can ask respondents to reflect on the kind of food they used to eat X years ago. Are they aware of main changes they have made to their diet (quite an open approach to tap into main, memorable changes). And why the change? (Many changes will be due to change in what is

differentiated.		available in shops, or due to rising incomes, or greater health awareness or due to food scares etc etc)
What or who influences food choices and changed behaviour to the greatest extent (eg parents, partners, other family members, friends, advertising, government, retailers)	FGs useful to explore processes by which individuals may be influenced in their food choices and changed behaviour. eg a 'nagging' partner, household shopper's purchasing behaviour, effective advertising, government educational campaigns, magazines, TV etc	As above. And again 'food choices' need to be fractured here. The survey already asks "over past 6months, what, if any, changes have you personally made to the food you eat over the last 6 months – carbs, fruit, fish, fat, salt, calories, meat". Followed by a why. Could take this a little further to investigate sources of influence on change.
Does this differ according to, for example, age and gender	As above	
What is the perceived ideal role for government in relation to specific issues relating to food choices (eg educational, regulatory, advisory etc)?	FGs may be useful here to understand reasons for perceived ideal role and reasoning for some attitudes. Some attitudes may be politically motivated	Attitude questions can be added to survey about role of government. But will need to be specific about the issue, eg salt and saturated fat content in processed foods (regulation), liberal attitudes – government should merely educate and provide information/advice, food labelling, role of government vis biotechnology etc.

Table 4: Question specific methodological considerations – Food Risk

Question (from ITT)	Limitations **(Purple indicates that a Focus Group is recommended)**	Potential approaches
What risks are individuals aware of?	Beware, asking about risk can lead to an overestimate of its salience within broader processes of choice.	Can ask Rs to spontaneously list food risks and perceived nature of the risk (whether believe there is a risk of sickness, becoming overweight, getting cancer etc.) And can then prompt with a list of foods – are they perceived as a risk and again nature of the risk.
How are risks defined?	Purpose - to explore people's understanding and use of the term 'risk' in relation to food (probably better explored in focus groups); also what do/don't people perceive as risky.	In the survey we can ask Rs to rate and rank risks. As above can ask whether foods thought of as risky and then follow up with a why i.e. what exactly is the nature of the risk.
To what extent do individuals think about these risks?	Survey cannot capture this effectively. FGs better designed to explore the various factors known to influence choices (price, taste, convenience etc) and then assess the extent to which risk is a consideration and how much of a priority it is within a hierarchy of influences.	Can get at the issue obliquely – asking to quantify how concerned and rank concerns but this does not tell us the extent to which various risks are weighed up on each shopping/eating occasion and extent to which they are perhaps ignored in a trade-off situation (eg trading taste/price/convenience against risk).
How do perceptions of risk impact upon behaviour?		We know behaviour from first half of the Food and You qre – asks about consumption/purchase of a wide range of food products. In the risk module we can ascertain whether those food groups are perceived as risky and why. Then look at correlations. Seeing something as risky but nevertheless buying/eating it then becomes the focus of study and either (a) trade-off considerations come to bear or (b) if perceived risk is pesticides, for

		example, then trust in external agencies or other food production actors comes to bear or (c) individuals may feel they are in 'control' and can mitigate risk by their own actions eg. preparing food or reducing incidence of consumption etc. The survey can also ask whether amount/regularity of purchase/consumption has changed in relation to food groups/items (already in part I) – follow up with 'why' questions to gain an indication of role of risk perceptions in decisions to change behaviour
What risks are people prepared to take?		See above. Can programme the CATI programme to ask further questions if individuals do buy/consume products which they indicate perceiving as risky. Can ask why In this way can explore risk/benefit decision making processes (albeit fairly superficially by means of a survey). Eg may eat high fat content products because they bring pleasure. Or cultural influences may prevail - families may expect a dinner of meat and 2 veg followed by a hearty pudding. Or fatalistic attitudes may be apparent, particularly given the wide range of foods claimed to carry risks
Will individuals take some risks but not others? (Is there a hierarchy of risk?)		As above, can 'measure' strength of risk perception and rank. Then looking at food purchasing/consumption behaviour can compare with strength of risk perception. How extreme does perceived risk need to be before it impacts on behaviour?
How do the risks perceived by the general public compare to the actual level of risk as understood by	This hard to gauge in a survey because different things being measured. FSA will have stats on incidence of illness/mortality whereas respondents will rate risk	Typically compare rank order of risks (in terms of incidence of death/illness) with rank order of anxiety levels (or respondents asked to rank risks according to perceived probability of becoming ill).

the FSA?	in a manner that reflects their ability to control, sense of dread, timescales involved etc. A far more complex assessment.	
Does the public understand food safety risk messages?	Ascertaining detailed understanding about messages is a challenge within the time confines of a survey. If there is lack of clarity or confusion, to understand the nature of the problem requires FG input.	First check knowledge of, for example, 5 a day, or safe food preparation/cooking/storage Ask where respondents receive their information from (about food safety and healthy diets etc) Can ask if seen/heard specific messages (use display cards).
Does the public act upon food safety risk messages?		If seen/heard messages can then ask if they have changed their behaviour since encountering these messages (break them down to ask about each) If not changed behaviour despite encountering and understanding messages – why not (for some their behaviour may already comply, for others....) We are interested in relationship between attitudes, perceptions and behaviour. Difficult to explore this complex relationship in a short survey. One approach we should therefore consider is some form of critical incident assessment. Specifically, the focus would be on a change in behaviour. Have Rs changed some aspect of their eating over the past few years? Is there a food or food group they have stopped consuming. Is there a food/food group they have started consuming. Why? Honing in on change will give us some leverage on the issue of how government can effect change in eating habits. BUT – Food safety in the home (preparation, contamination etc) VERY hard to assess by means of surveys. Large gap between self-reported behaviour and observed behaviour in the home.
Are people aware of		Can list different regulations/controls/agencies – have respondents heard

controls which exist to protect the safety of food?		of them - ask what they do.
Do they trust these controls?		Could use the 'statements' approach as used in the first sections of Food and You. How much do respondents agree/disagree that government/FSA/others (differentiate) put the health and safety needs of consumers before the needs of business or farmers etc. Attitudes on – How effective are the measures in place How effective are inspectors at ensuring all food producers comply with health and safety regulations (be specific which ones)
Which aspects of food production are regarded as risky?	Interested in aspects of food safety relating to the supply of food (rather than food production in the home), in particular pesticides, additives, preservatives, GM content . Also of interest here would be: novel foods in general, nanotechnology, sustainable production.	Can fold this question in with the first question in the Table.

Table 5: Question specific – previous survey questions – Food Choices

Question (from ITT)	
Which factors influence food choices? Want to know how these factors interact and affect choice 'to bring about positive dietary change'. So of interest is hierarchy of choices and trade-offs.	**INFLUENCES AND PRIORITIES (HIERARCHY OF CHOICE)** When you go shopping for food, what would you say are the most important factors that influence your choice? (Eurobarometer, 2006) (Read out, rotate) Price Taste Quality Country of origin Avoiding food allergies Appearance/freshness Brand Name Food safety Convenience/availability Habit Family preferences You and your family's health Production methods (organic, free range, eco-friendly, etc.) **From BSAS** There are many reasons why we choose the foods that we eat at home. What would you say are the most important influences on your choice of foods? Code all that apply. Probe: which others? 1 Quality or freshness of food 2 Taste of food 3 Eating food that is healthy or low fat 4 Presentation / packaging / advertising / brand

	5 Vegetarian or other special eating habits 6 Number of additives or E numbers in food 7 Habit or routine 8 To try something new or different 9 What my family / spouse / children will eat 10 Convenience in preparation 11 Availability in the shops I can usually get to 12 Recommendations from friends, family or colleagues 13 Foods I know how to cook / prepare 14 Price of food / value for money / special offers 15 Whether food is organically produced 16 Animal welfare / free range 17 Impact on the community where food comes from / fair trade / supporting local farms and industries 18 Impact of the food on the landscape where it was produced 19 Amount / type of packaging used e.g. recycled 20 Other answer (Please say what) 21 (Someone else decides on most of the food I eat) 22 (No particular influence) **INFLUENCES** BSAS Which, if any, of the following applies to you? Probe: which others? 2 I am a vegetarian or vegan 4 I avoid certain foods as I react badly to them 5 I am on a diet trying to lose weight 1 I avoid certain food for religious reasons 9 I avoid certain food because of medical advice 35 None of the above

	0 (Don't know) **From FDBC** Q1 When you go food shopping, which of these affects the choice of foods you buy? The costs of food/my food budget Not eating certain foods because advised not to by health professionals What my spouse/partner will eat What my child/children will eat Trying to eat a healthy balanced diet The kinds of food I like eating Convenience Whether my spouse/partner is with me Whether my child/children are with me Packaging/display Food advertising Programmes/news items about food in the media (TV/magazines, etc) The kinds of food my friends buy The kinds of food my relatives buy Whether I'm hungry or not Special offers **From PPF** **1. In general, how important to you are issues relating to FOOD?** **(please select one answer from the boxes below)** 1 - not important 2 - slightly important 3 - moderately important 4 - highly important 5 - extremely important

	PPF **2. In general, when you are choosing foods, how important is it that the food:** a is nicely packaged? b itself has a good appearance? c is on special offer? d is animal welfare friendly? e tastes good? f is easily available? g is British? h is good for your health? i is fresh? j has a well-known brand name? k is low in price? l is environmentally friendly? m was produced locally? n is easy to prepare? o was produced organically (without the use of pesticides or additives)? **From: Avon Longitudinal Study of Parents and Children** Do you find the price of fresh fruit and vegetables: 1 cheap 2 reasonable 3 expensive ALSPAC Would you (or the shoppers in your household) buy more fresh fruit and vegetables if they cost less? 1 Yes 2 No

	ALSPAC When you are choosing food for meals for your family, how much do the following influence your choice? 1 A lot 2 Quite a bit 3 A little 4 Not at all a) Cost b) What your children prefer to eat c) What you prefer to eat d) What other people prefer to eat (e.g. partner, other adult) e) Convenience of preparation f) What is good (healthy) for us to eat g) The special offers available when shopping h) Adverts/programmes on the television/radio i) Articles about food and recipes in newspapers/ magazines j) Dietary requirements of a member of the family k) Other (please tick and describe) ALSPAC When you (or the shoppers in your household) do the food shopping do you: 1 Never or rarely 2 Some of the time 3 Half of the time 4 Most of the time 5 Always a) buy own brands/labels when available b) buy special offers when available c) buy large size packets or multibuys to get better value d) check labels to see what is in the food or drink

	ALSPAC Which one of these statements best describes the way you feel about your cooking? 1 I always enjoy cooking 2 I enjoy cooking when I can take time over it 3 I cook only because I have to, not because I enjoy it 4 I avoid cooking if at all possible 5 I have no real feeling towards cooking Do you think about any of these health issues when choosing food? 1 Yes often 2 Yes, sometimes 3 No, not at all a) Heart disease b) Cancer c) Your weight d) Food allergies/intolerance e) Healthy teeth f) Other (please tick and describe) **From BSAS** How much do you agree or disagree with each of these statements… 1 Strongly agree 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Strongly disagree 0 Don't know a. …I buy food that is processed as it is easier to prepare and store? b. …I like food to be unprocessed, even if this means that it takes more effort to

	prepare and keep fresh? c. …I want food that I buy to look attractive, even if this means it has been processed in some way? d. I want food that I buy to be unprocessed, even if this means that it has an irregular appearance
Do individuals prioritise between potentially conflicting choices and how are trade-offs reached?	**From Eurobarometer** QC10 What additional price premium would you be willing to pay for hen's eggs sourced from an animal welfare friendly production system? (SHOW CARD – READ OUT – ONE ANSWER ONLY) No additional price premium An additional 5% An additional 10% An additional 25% More than an additional 25% DK/NOT APPLICABLE **From BSAS** Imagine an extremely low calorie cake. It tastes the same and looks the same as conventional cake sold in the supermarket but has had an extra ingredient added to reduce the number of calories it contains. Please say whether… a. …you would buy the extremely low calorie cake rather than traditional cake? 1 Definitely would 2 Probably would 3 Probably would not 4 Definitely would not 0 (Don't know) (If not "definitely would not" at "a") And please say whether you would buy the extremely low calorie cake if… b … it was more expensive than traditional cake? 1 Definitely would 2 Probably would

	3 Probably would not 4 Definitely would not 0 (Don’t know) c … it had a shorter shelf-life than traditional cake? 1 Definitely would 2 Probably would 3 Probably would not 4 Definitely would not 0 (Don’t know) **OBSTACLES TO HEALTHY EATING** **From HEPS** Here are some things which might discourage people from eating more healthy foods. Which do you think might PREVENT you from eating more healthy foods? (2003-05) 1 - Family discouraging or unsupportive 2 - Friends discouraging or unsupportive 3 - People at work discouraging or unsupportive 4 - Not knowing what changes to make 5 - Not knowing how to cook more healthy foods 6 - Poor choice of healthy foods in canteens and restaurants 7 - Poor choice of healthy foods in places where you shop 8 - Healthy foods are too expensive 9 - Healthy foods take too long to prepare 0 - Healthy foods too boring 1 - Lack of will-power 2 - Don't like the taste/ don't enjoy healthy foods Y - Don't Know X - None of these

	0 – Other **From HSE** What would stop you making these improvements to the way you eat? 1 Don't like healthy foods 2 Doesn't satisfy hunger 3 Don't want to change eating habits 4 Lack of motivation 5 I eat what I'm given 6 No healthy options at home 7 No healthy options at school 8 None of these 9 No changes needed 10 Something else HSE What would encourage you to make these improvements to the way you eat? 1 Advice from parent 2 Advice from teacher 3 Advice from school nurse 4 Advice from friend or brother or sister 5 TV adverts 6 Information leaflets 7 Being motivated to 8 Being given healthier food 9 None of these 10 Something else **From LIDNS**

	Here are some reasons why people don't always have the quality or variety of food they want. Can you tell me if any of these are reasons why you (or your household) do (does) not always have the kinds of food you want to eat. 1 Not enough money 2 Not enough time for shopping 3 Not enough time for cooking 4 Not available in local shops 5 Not available at work 6 It's too hard to get to the shops (health problems) 7 It's too hard to get to the shops (lack of transport) 8 It's too hard to get to the shops with the children 9 The shops I can afford to go to don't sell a wide variety of foods 10 The shops I can afford to go to don't sell good quality foods 11 These kinds of foods get eaten too quickly 12 Lack of cooking facilities 13 Lack of storage facilities 14 Difficulty preparing or cooking meals 15 Not knowing how to cook different foods/meals 16 No particular reason Out of those you have chosen, which would you say is the most important reason? Repeated for 2nd and 3rd reasons) **From FDBC** Q.2. Other than cost, what limits the choice of food you buy? (TICK EACH THAT LIMITS YOUR CHOICE) Yes, limits my choice What is available in the store that I can get to

	Not much space to store food at home Small or no fridge Limited cooking facilities Don’t know how to cook some foods Ability to carry and transport foods home Food goes off before it’s eaten Difficult to get to shops with children Difficult to get to shops because of age or disability **CHANGE IN EATING PATTERNS & INFLUENCES** FDBC Q.6. Compared to 12 months ago do you think you consume more, less or the same amount of each of the following? Tick one box for each item listed. More Same amount Less Do not consume White bread/toast/rolls, etc. Brown bread/toast/rolls etc Full fat milk Semi/skimmed milk Fruit Vegetables (except potatoes) Cakes/biscuits Meat (excluding chicken) Chicken

	Fish Alcohol **From FDBC** Q.3. Have any of the following caused you to change what foods you buy over the last twelve months? (TICK AS MANY AS APPLY) Illness Difficulty walking Acquired a household car/van Loss of household car/van Less money to spend More money to spend Got married/new (live in) partner Separated from husband/partner New baby Kid(s) moved out Other reasons
Do influential factors differ across sub groups (eg. age, ethnicity, religion, gender, region)	Ensure full range of covariates collected in survey
Do factors change over time? Any relationship between age and food choice may reflect differences associated with cohort or ageing, these must be	Add new questions

differentiated.	
What or who influences food choices and changed behaviour to the greatest extent (eg parents, partners, other family members, friends, advertising, government, retailers)	From FDBC **14. Have any of the following caused you to change what foods you buy over the last year – or 6 months to be consistent with q. above** (TICK AS MANY AS APPLY) Illness Difficulty walking Acquired a household car/van Loss of household car/van Less money to spend Lost job More money to spend Got married/new (live in) partner Separated from husband/partner New baby Kid(s) moved out Other reasons From alspac **17. When you are choosing food to eat yourself, how much do the following influence your choice?** 1 A lot 2 Quite a bit 3 A little 4 Not at all a) Cost b) What your children prefer to eat c) What you prefer to eat d) What other people prefer to eat (e.g. partner, other adult)

	e) Convenience of preparation f) What is good (healthy) to eat g) The special offers available when shopping h) Adverts/programmes on the television/radio i) Articles about food and recipes in newspapers/ magazines
Does this differ according to, for example, age and gender	Covariates needed
What is the perceived ideal role for government in relation to specific issues relating to food choices (eg educational, regulatory, advisory etc)?	New questions needed

Table 6: Question specific – previous survey questions – Food Risk

Question (from ITT)	
What risks are individuals aware of?	I will read out a list of potential risks. For each of them please tell me how likely you think they are to happen to you personally (Eurobarometer, 2006) For each of the following issues, please tell me if you are very worried, fairly worried, not very worried or not at all worried by it? (Very worried, fairly worried, not very worried, not at all worried, DK) BSE GM products in food or drinks Additives like colours or preservatives Contamination by bacteria like salmonella in eggs or listeria in cheese Chemical substances that are formed during heating baking, barbecuing or frying foods Residues in meats like antibiotics or hormones Pollutants like mercury or dioxins Pesticide residues in fruit veg or cereals Unhygienic conditions in food handling at home Unhygienic conditions in food handling outside home like in food processing plants, shops or restaurants The welfare of farmed animals
How are risks defined?	
To what extent do individuals think about these risks?	What are all the things that come to your mind when thinking about possible problems or risks associated with food? (Eurobarometer)

How do perceptions of risk impact upon behaviour?	UEA Mori Please tell me how recently you have heard or seen something in the media about the following health risks. (This week, in past month, In past 6 months, More than 6 months ago, never) BUT THIS DOESN'T ASK WHETHER INDIVIDUAL PERCEIVES THIS AS A RISK Alcohol Obesity / eating too much / exercising too little Chemicals that can harm your health A certain type of food being unsafe or bad for your health Infectious diseases such as flu or SARS Please tell me how you reacted to the last story you heard about a type of food being unsafe or bad for your health. (UEA Mori) You have permanently changed your eating habits You avoided the food mentioned in the story only for a while You got worried about the problem but finally you did nothing about it You have ignored the story Other (SPONTANEOUS)
What risks are people prepared to take?	
Will individuals take some risks but not others? (Is there a hierarchy of risk?)	
How do the risks perceived by the general public compare to the actual level of risk as understood by the FSA?	I will read out a list of potential risks. For each of them please tell me how likely you think they are to happen to you personally (Eurobarometer, 2006)

	I will read out a list of potential risks. For each of them please tell me how likely you think they are to happen to you personally (very likely, fairly likely, not very likely, not at all likely, DK) Environmental pollution damaging your health Consumer goods (other than food) damaging your health Being injured in a car accident The food you eat damaging your health A serious illness Being the victim of terrorism Being the victim of a crime
Does the public understand food safety risk messages?	Survey questions from McCarthy et al, (2007) – Ireland **Assessing knowledge is one way to measure public understanding**; You are cooking a chicken that will be served cold tomorrow is it safe to (4 options) After handling raw meat, poultry or fish is it acceptable to clean your hands by (5 options) Is it safe to defrost raw meat: (2 options, in fridge, on counter) Is it safe to eat fruit and vegetable (2 options, as purchased, once washed) When you defrost food it is only safe to cook or eat it (3 options, within 24h, 48h, 62h) In the fridge it is safe to store raw meat on the (3 options, top, middle, bottom shelves) It is safe to eat refrigerated leftovers for up to (2-3 days, 4 days) The more you pay for food the safer it is Feeding pets in the kitchen is a food safety risk You can tell food is unsafe by appearance and smell When beefburgers are brown on the outside they are safe to eat It is okay to freeze food that has hust gobe past its use-by date Dishcloths can carry unsafe bacteria It is always safe to use the same chopping board for raw meat and vegetables

Does the public act upon food safety risk messages?	UEA Mori Please tell me how recently you have heard or seen something in the media about the following health risks. (This week, in past month, In past 6 months, More than 6 months ago, never) Alcohol Obesity / eating too much / exercising too little Chemicals that can harm your health A certain type of food being unsafe or bad for your health Infectious diseases such as flu or SARS UEA Mori Please tell me how you reacted to the last story you heard about a type of food being unsafe or bad for your health. You have permanently changed your eating habits You avoided the food mentioned in the story only for a while You got worried about the problem but finally you did nothing about it You have ignored the story Other (SPONTANEOUS)
Are people aware of controls which exist to protect the safety of food?	See list in tracker survey
Do they trust these controls?	UEA Mori 11 How CONCERNED are you about the following? (for each issue, please select one answer from the BOXES BELOW) b The food supply system's role in health scares c The role of supermarkets in the farming industry d Reliability of food safety information provided by the government

	f Food miles (i.e. the distance that food travels) g The availability of information about where foods comes from 1 - not concerned 2 - slightly concerned 3 - moderately concerned 4 - highly concerned 5 - extremely concerned UEA Mori Suppose a serious food risk were found in fish or chicken. Who would you trust the most to inform you about this risk? (Read out, rotate, max 2 answers) Scientists Public authorities Supermarkets or shops Farmers Food manufacturers Media Consumer groups Your physician / doctor None (SPONTANEOUS) Other (SPONTANEOUS) UEA Mori Would you say that usually public authorities' actions in the UK with regards to food safety risks...? Go beyond what is needed Are appropriate Are insufficient DK UEA Mori

	For each of the following statements, would you say that you totally agree, tend to agree, tend to disagree, totally disagree Public authorities in the European Union view the health of consumers as being more important than the profits of producers There are strict laws in the European Union to make sure that food is safe Food safety laws in the European Union are properly enforced Public authorities in the European Union do a good job in informing people about risks related to food Public authorities in the European Union take citizens concerns about health risks very seriously 9 statements in total **From UEA MORI** Q19 SHOWCARD K (R) Using this card, to what extent would you trust each of the following organisations and people to tell the truth about genetically modified food? READ OUT a – q. ROTATE ORDER. TICK START. SINGLE CODE ONLY FOR EACH. Trust a lot Trust a little Neither/Nor Distrust a little Distrust a lot Don’t know a Consumer rights organisations (e.g.Consumers’ Association)

	b Food manufacturers c Friends and family d Environmental organisations e Scientists working for Government f Local authorities g People from your local community h Biotechnology industry i Scientists working for the biotechnology industry j The national government k The European Union l Scientists working for environmental groups m Scientists working for Universities n Doctors o Farmers p The Food Standards Agency (FSA) q Department of Environment,Food and Rural Affairs (DEFRA) ASK Q19R ONLY IF INWALES The Welsh Assembly ASK Q19S ONLY IF INSCOTLAND s The Scottish Parliament and its executive
Which aspects of food production are regarded as risky?	FIRST WHAT KNOWLEDGE ABOUT FOOD PRODUCTION… UEA Mori Which of the statements on this card describes how knowledgeable you feel about the way the food industry prepares and manufactures food nowadays? 1 I know little or nothing 2 My knowledge is very patchy – I know a bit about 3 the areas that concern me but no more 4 I have a reasonable, basic knowledge

	5 I have a good knowledge 0 (Don't know) FOOD PRODUCTION Do you buy bags containing ready-to-eat salad leaves? 1 Yes 2 No 3 I have done in the past but I don't any more 0 (Don't know) UEA Mori It is possible to increase the shelf-life of products such as fresh fruit juice by putting Them under high pressure. Some people think using high pressure retains the Flavour of the food more than pasteurisation using heat. If this process was used in the production of a food which you eat regularly, how concerned would you be? 1 Very concerned 2 Fairly concerned 3 Not very concerned 4 Not at all concerned 0 (Don't know) UEA Mori Imagine a sausage that helps reduce the risk of high blood pressure, which tastes the same and looks the same as normal sausages sold in the supermarket. It would be available in meat and vegetarian varieties. The sausage could be produced by adding ingredients which have been medically proven to reduce the risk of high blood pressure. Please say whether a. …you would buy the sausage that helps reduce the risk of blood pressure rather than a traditional sausage? 1 Definitely would

	2 Probably would 3 Probably would not 4 Definitely would not 0 (Don't know) (If not "definitely would not" at "a") And please say whether you would buy the sausage that helps reduce the risk of high blood pressure if b …it was more expensive than a traditional sausage? 1 Definitely would 2 Probably would 3 Probably would not 4 Definitely would not 0 (Don't know) c …it had a shorter shelf-life than a traditional sausage? 1 Definitely would 2 Probably would 3 Probably would not 4 Definitely would not 0 (Don't know) a. A magnetron is a device in which food can be exposed to radiation to heat it and kill bacteria before eating. How concerned would you be about eating food prepared using this device? 1 Very concerned 2 Fairly concerned 3 Not very concerned 4 Not at all concerned 0 (Don't know)

	(Respondent independently identifies device as being a microwave) b. A microwave is a device in which food can be exposed to radiation to heat it and kill bacteria before eating. How concerned would you be about eating food prepared using this device? 1 Very concerned 2 Fairly concerned 3 Not very concerned 4 Not at all concerned 0 (Don't know) c. A range or products have been developed that contain a concentrated variety of an ingredient found in vegetable oil that lowers levels of cholesterol found in the blood. How concerned would you be about eating food that contained this ingredient? 1 Very concerned 2 Fairly concerned 3 Not very concerned 4 Not at all concerned 0 (Don't know) (Respondent independently identifies ingredient as being Benecol) d. A range or products including Benecol have been developed that contain a concentrated variety of an ingredient found in vegetable oil that lowers levels of cholesterol found in the blood. How concerned would you be about eating food that contained this ingredient? 1 Very concerned 2 Fairly concerned 3 Not very concerned 4 Not at all concerned 0 (Don't know)

	e. There is an ingredient available that provides a non-meat source of protein grown in large tanks using a processed edible fungus and added to a variety of products. How concerned would you be about eating food that contained this ingredient? 1 Very concerned 2 Fairly concerned 3 Not very concerned 4 Not at all concerned 0 (Don't know) (Respondent independently identifies ingredient as being Quorn) f. There is an ingredient called Quorn available that provides a non-meat source of protein grown in large tanks using a processed edible fungus and added to a variety of products. How concerned would you be about eating food that contained this ingredient? 1 Very concerned 2 Fairly concerned 3 Not very concerned 4 Not at all concerned 0 (Don't know)

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Appendix 1: Literature search inclusion criteria

As noted in section 3, given the time frame available and the primary objective of the review to appraise methods used to study food choice and public perceptions of food-related risks, a formal systematic review was neither possible nor appropriate. To avoid bias, however, the core principles of systematic review methodology were used in the literature searches - namely formal and transparent methods for the location, selection, appraisal and synthesis of evidence on a particular topic. Accordingly, formal search strategies and inclusion criteria were developed in discussion with the SSRU team. These are presented here.

Publication language

- English language only

Publication date

- 2000 to date, but where appropriate key studies were included, such as the ESRC Nation's Diet studies of the 1990s and studies of risk perceptions associated with BSE and other "food scares" in the1990s.

Focus

- Original studies and surveys of food choice.
- Because the term "food choice" covers a whole array of decisions at different points in the food chain (and in the academic literature covers a wide array research concerns), the following components of consumer food choice as most relevant to developing new questions for FIS 2 and the monitoring of key attitudes and behaviours as per the FSA strategic plan were included:

    - purchase/buying of food(s) in retail contexts, to include markets
    - consumption/eating of food in different contexts, i.e. at home and eating out. Latter to include workplace, restaurants, fast foods and so forth.

  This *included* choices of whole diets, e.g. usual or healthy diets, but also choice of specific foods, e.g. fish, but *excluded* studies of choices/decisions about:

    - storage
    - planning and preparation of food in either a household or institutional context
    - disposal/waste

- Original studies and surveys of perceptions of food risks related to biological and chemical hazards, novel foods, food technologies such as GM and

nanotechnology, also perceptions of safety in relation to production methods, such as organic farming.
- Perceptions of general diet-related risks, including those associated with particular kinds of food such as fish.

Types of studies

- Observational studies/surveys of normative food choice and dietary behaviour.
- *Exclude* intervention studies designed to effect dietary/behaviour change, studies of eating disorders, weight reduction or other illnesses, use of dietary supplements or other pharmacological substances.
- For risk perception, however, *include* studies in “normal” situations as well as during “food scares”.

Types of participant

- Studies and surveys of the general adult population (>16 years) including those defined as potentially “vulnerable” or “disadvantaged” population groups, to include those on low incomes, minority ethnic groups and people at transitional life stages.
- *Exclude* studies and surveys of participants selected on the basis of diagnosis or elevated risk of illness conditions, such as obesity, CHD or diabetes. Also *exclude* those in particular physiological states, e.g. pregnancy.

Study methods and under-pinning discipline

- *Include* those academic disciplines and their associated methodologies that both have been widely used in relation to food choice and risk perceptions and which offer utility in the development of survey questions, namely psychology and social psychology, sociology (to include both quantitative and qualitative social research), social anthropology, and market research.
- *Exclude* economics and history; while there are rich literatures here on food choice/consumption, neither economic nor historical analyses generally involve primary data collection.

Study location

- Studies and surveys conducted in the UK only. While systematic reviews examining the efficacy of interventions will include studies from other comparable country contexts and population groups they were *excluded* here. This was because of the specificity of the influences on both food choices and risk perceptions and particularly socio-cultural influences.

Appendix 2: Topic Guide used for expert interviews

<u>Topic Guide - Food Choice and Food Risks Study</u>

Interview procedure:

1. Send, in advance, the project summary detailing the project's background, aims, methods and research team. Check this has been read and understood, if not, briefly describe the aims.

2. Explain that the interviews are designed to gain the perspective of experts in the field with a particular focus on what they see as the main methodological challenges in researching the issues of food risks and food choices.

3. Ask for verbal consent to conduct and record the interview, explain that the recording will be stored securely and destroyed at the end of the project.

4. Assure confidentiality and anonymity of views at the reporting stage unless the interviewee is happy to be referenced in the report. Gain consent.

General

1. What is your general area of expertise
2. The FSA have asked us to investigate food choices, what do you think of this term?
3. Are you doing any research now in this area
4. Choice –
   (a) What types of choices do people make in relation to food
   (b) What do you see as the key influences on these types of food choices

. Risk –
   (a) What are the key food risk issues that we should cover in a survey
   (b) What are the main influences on perceptions of risk
   (c) Are there any emergent risks/issues

Methodology

5. Choice – What are the best methods to use to determine how
   (a) food purchasing choices are made
   (b) food eating choices are made (at home and when eating out)
   Choice – Is it possible to examine the trade-offs people make, and if so, what are the best methods to do this
   Choice – what are the best methods to use to determine how choices might be influenced for the better (to advise on best approach for government interventions, for example to reduce obesity)
   Risk- What are the best methods to determine perceptions of risk

Risk- What are the best methods to determine the relationship between perceived risks and behaviour

6. What are the key methodological challenges in studying these areas
7. Are all methods suitable for different subgroups (eg. diary methods may not be suitable for those with literacy problems to take one obvious example)

Updating

8. Have any key studies/ books on these issues been published in the last year or so.
   And any key texts from before 2000
9. Are you aware of any ongoing research in the area?
10. What do you think are the key gaps in evidence relating to food choice/food risks
    Prompt – what would be the best approach methodologically to fill these gaps?

Government Policy

11. Interventions to improve the nations diet are quite a challenge. How effective is current government policy in tackling obesity?
12. What are the best methods for communicating messages to the public about food risks and 'good' food choices.

Closing

13. If you were to add a couple of questions to a survey on food choices/food risks what would they be?
14. Are there any other important issues relating to food choice/risk that we haven't covered but which you think we should consider as part of our study?
15. Is there anything else you would like to add?

Appendix 3: Focus group Topic Guide

Food Standards Agency: public attitudes to food choice & risk

1.30pm **1.35pm** **1.40pm**	**Welcome participants and explain the aim the purpose of the focus group** • Provide participants with an information sheet about the project. • We work for PSI - an independent research institute. • We have been commissioned by the FSA to find out about people's attitudes to food. In particular we want to explore why you make certain food choices and what tradeoffs you are prepared to make (for example choosing food that it is cheaper but less tasty etc). We would also like to get you views on some health campaigns that the Government has been using. • Ask each participant to sign a consent form if they are still happy to participate **Ground Rules** • We want to hear about your experiences. There are no right or wrong answers - we just want to hear about your own experiences and views. • It is important that everyone is given a chance to express their views, please give others a chance to speak. • We would like to record the group discussion, but that information will remain confidential and participants will not be identifiable in anything we write about the research. • We would like to capture everyone's views on the recording so please try not to speak over each other. • We will finish on time but we have a lot to get through so at times I may need to hurry us to get to the next section. • Please turn off your mobile phones if you haven't already. • Do you have any questions before we start? *Warm up, ice breakers and introductions* Introduction to the full room: Please say your name and a little bit about yourself; what do you do? Where do you live? Who do you live with?
1.50pm	**Warm up**

	Explore general attitudes to the term ‘foods’, ‘food choice’ and ‘food risks’. Using a flipchart ask participants to shout out any words that come to mind when they hear each term starting with ‘food’ first. They should say anything that comes to mind, as this offers an opportunity to explore unconscious thought processes underpinning these words/terms. **Meal labels – what do you call the main meals you eat around midday and in the evening (lunch, tea, dinner, supper etc)**
2.00pm	**Making food choices** Provide participants with a range of photos/images of different food options. Make sure that there is a real variety of dishes represented in the photos/images. Ask participants to spend five minutes familiarising themselves with all the food options and ask the following questions: - What food would you choose to eat perhaps tomorrow evening? (Participant can opt to choose starter/main course/pudding) Why would you choose this food? (make sure participants provide reasons) Probe – broaden the discussion to evening meals in general - what are the main factors you think about when choosing an evening meal (tease out the relative importance to people of taste, cost, convenience, health considerations and ethical concerns) - What food would you not choose to eat tomorrow evening? Why not? Hold up images of ‘bad’ foods (cakes, biscuits, chocolate, crisps) and ask for responses to them - Do you eat any of these foods? - When would you eat them? - What do you think of these foods? - Do you try and limit the amount of these things you eat? (probe on why – look out for spontaneous use of terms such as risk) (probe on barriers to change – if seen as ‘bad’ food what prevents them from stopping consumption or reducing consumption) - Have you made any changes to your diet in recent years? How? why and what prompted change? - Do you think these sorts of foods are a risk to your health? (probe on whether participants smoke or exercise – is there a cluster of good and bad health behaviour?) - If have not made any changes, Would you like to make any other changes to your diet? (again, what prevents change)
2.20pm	**Case scenarios**

	Present 3 hypothetical case scenarios and ask participants some questions about each scenario. **Scenario 1: Steak out of date** You have bought an expensive fillet steak/or other cut of meat but you forgot to eat it so it is out of date (by a couple of days). - Would you eat it anyway? Why? **Scenario 2: fish in extinction** - What do you think about eating fish at risk of extinction such as cod? Why? **Scenario 3: lunch on a week day** Think about the last lunch you had - What did you eat? - Is this a typical lunch for you? - What things do you think about when making decisions about what to eat for lunch? - Why would you make your choices? (provide detailed reasons)
2.40pm	**10 minute break for refreshments**
2.50pm	**Government messages** Show TV adverts for health campaigns (salt, fat and poisoning). First show two adverts on food safety (turkey and transfer of bacteria in food preparation). After showing the ads cover the following questions: - Have you seen this advert before? If yes, how often? - What did you think of it? Did you understand it? - What did you like or dislike about it? - Would you change anything about it? - Have you learned anything? - Do you think that this ad can positively influence people? Why? - These two adverts highlight the risk of food poisoning - are there any other ‘risks’ that you think about in relation to food? (probes – heating properly /defrosting /used by dates/ Best before / Once opened eat within 3 days) Secondly, show two adverts on longer term health (salt /saturated fat): - Have you seen this advert before? If yes, how often? - What did you think of it? Did you understand it? - What did you like or dislike about it?

	- Would you change anything about it? - Have you learned anything? - Do you think that this ad can positively influence people? Why? - Would you describe eating fat and too much salt as a 'risk' to your health? - Do you think that the Government should try and influence people to eat more healthily?
3.15pm	**Trade offs and wrap up** Before we finish we would like to ask you a few more questions about food choices and eating: - What is most important to you when choosing food; taste, cost, convenience, health, amount etc? Anything else? Why? - In general, when choosing food what are the trade offs you make? For example, would you rather choose something tasty at all costs (even if it is unhealthy) or would you rather choose something healthy even if it is not tasty? Ask participants to consider the following tradeoffs; - Do you ever decide not to eat something for environmental or ethical reasons? Why? - Steak (meat in general) has a negative impact on our environment as cows contribute to carbon foot print – knowing this, would you still choose to eat it? Why? - If you won the lottery and could employed a chef – would this change what you eat? In what ways? Finally, going back to one of the earlier questions - In general, when choosing food; what is the first thought that comes to mind?
3.30pm	**Close & pay incentives**

Appendix 4: Broad methodological approaches

Table 7 sets out the pros and cons associated with different methodological approaches to studying food related attitudes, perceptions and behaviour – these apply to food choices and perceptions of risk.

They have been grouped by broad methodological approach and then by specific method. The broad strengths and weaknesses of qualitative versus quantitative approaches are summarized and then those particular methods in relation to collecting information on food choice behaviours and influences on these. It thus allows delineation of what aspects of and influences on food choices can be captured in a general population survey and those which cannot.

<u>Table 3: Summary of methods used to study food choices and their influences</u>

Methods	Object of study & key questions	Theoretical orientation & disciplines	Strengths & weaknesses
Qualitative	*Food cultures and non-nutritional functions of food and eating, “lay epidemiology” and routine practices*	Many specific theories, but mostly broad commitment to interpretivist and social constructivist approaches	Strengths: • High validity [doesn't this depend on quality of study? • Insights into individual and cultural meanings and symbolic bases of routine practices, i.e. food cultures and cultural repertoires • Can access actual practice rather than just reported behaviours Weaknesses: • Limited reliability • Usually purposive sampling that allows for theoretical, but not wider empirical generalizations
Observations, ethnography	Actual practices, impact of context on these	Social anthropology	Particular strengths: • Can capture routine practices and contextual variation in these

	Cultural repertoires, household practices of storage, planning, preparation, serving, eating and disposal decisions		• Can bridge the gap between actual and reported behaviour • Can capture trade-offs Particular weaknesses: • Resource intensive • Requires skill
Focus groups,	*Cultural repertoires, storage, planning, preparation, serving, eating and disposal decisions, also trade-offs*	Sociology	Particular strengths: • Can capture lay discourses and meanings • Can provide insight to trade-offs and interactions • Good for theoretical generalization Particular weaknesses: • Is not statistically representative • Requires skill
In-depth interviews with varying degrees of structure	*Cultural repertoires, storage, planning, preparation, serving, eating and disposal decisions, also trade-offs*	Sociology	Particular strengths: • Can capture lay discourses and meanings, but only at individual level • Can provide insight to trade-offs and interactions • Good for theoretical generalization Particular weaknesses: • Is not statistically representative • Requires skill
Quantitative	*A range of food choice decisions, influences mostly in terms of individual attributes*	Again many specific theories and disciplines, but broad commitment to realism/positivism	Strengths: • High reliability • With representative sampling allows empirical generalizations and can capture socio-demographic differences Weaknesses: • May access “public” rather than “private” views, i.e.

			social desirability bias • Low validity for some food choice decisions, particularly those that are routine and contextual
Questionnaire, psychometrics, usually structured interviews/questionnaires	*Mostly acquisition and eating decisions and psychological influences on these, such as attitudes, norms, intentions etc depending on model used*	Psychology	Particular strengths: • High reliability • Good for quantitative measurement of cognitive attributes that influence choices Particular weaknesses: • Less good at accessing influences on choice that are routine and contextual, including cultural meanings
Surveys with structured interviews	*Mostly acquisition and eating decisions and reported influences on these, also knowledge, attitudes, reported behaviours*	Sociology, social research	Particular strengths: • Representative samples to allow empirical generalizations • Broad issue coverage • Can measure socio-demographic differences and trends in these Particular weaknesses: • Less good at accessing influences on choice that are routine and contextual
Market research, structured interviews	*Mostly acquisition, especially shopping, and eating decisions and reported influences on these, also knowledge, attitudes, reported behaviours*		

Builds on Dowler et al. (2006)

Appendix 5 General considerations in survey questionnaire design

- Identify appropriate scales or indicators (taking just one example: do we wish to know simply whether people are worried about pesticides in their food, which would generate a 0 or 1 outcome measure or do we wish to know how concerned they are, measured perhaps by means of a 5 point likert scale and/or as measured by their shopping patterns, perhaps only ever purchasing organic products).
- Ensure that the language used by clients (such as ‘food risks’) is understood or used in the same way by the public. If not, identify appropriate concepts and language to inform question design.
- Ensure questions are simple and easily understood without ambiguity.
- Beware of social desirability bias which can lead to overestimation (such as charitable giving) or underestimation (such as alcohol consumption or, perhaps, frequency sweets are given to children).
- Beware of loaded words such as ‘healthy’, ‘natural’, regular.
- Questions must avoid being biased or leading (eg, ‘are you worried about pesticides on your food’ with a yes or no response)
- Periodical behaviour measurement can be problematic. Care needs to be taken in relation to reference periods. Food-related behaviour in particular, with low saliency, means respondents have difficulty remembering events after a short period of time. Recall questions relating to consumption of food items are therefore advised to focus on very recent behaviour and short periods of time (Smiciklas-Wright, Mitchell et al. 2002).
- ‘Telescoping’ is a related problem and refers to the tendency of respondents to recall certain behaviours without being able to remember precisely when the event or behaviour took place (Sudman and Bradburn 1982).
- Results depend in part upon scales and formats used (for example, Hartley and Betts, 2010, found that when using Likert-type scales, significantly higher ratings were obtained when using positive labels and higher numerical ratings on the left of an 11 point scale compared with three other scaling versions).
- The order of questions can impact upon results.
- Importance of anchor points. If terms like ‘completely’ are used at endpoints in a scale it is less likely to get ratings on the endpoints due to the absolute requirement expressed in the anchors.
- Providing numeric scales with anchors only for the endpoints can lead to more people choosing the endpoints. Conversely, presenting a scale as a series of verbal descriptions, for example, “not at all worried, somewhat worried, very worried, or extremely worried” leads to more dispersion and less clustering of responses.
- Attitudes tend to be complex and multi faceted, single questions eliciting attitudes therefore tend to be unreliable. Sets of questions or attitude scales are therefore advised.

Appendix 6: Suggested module questions

The below are suggested questions for exploring the two topics of interest. They are not final questions for inclusion in the survey.

Green questions were in FIS wave 1, they are included here as they are needed and relevant but it is assumed they are core questions and are therefore in addition to the 10 minutes.

Dark pink highlighted questions are potentially removable to get the questionnaire down to 5 minutes.

FOOD RISKS MODULE
SECTION I - KNOWLEDGE AND PERCEPTIONS OF AND RESPONSES TO RISK **FSA Q. - What risks are individuals aware of? And** **FSA Q - To what extent do individuals think about these risks?** **FSA Q. - What do/don't people perceive as risky?** **1. What are all the things that come to your mind when thinking about possible problems or risks associated with food?** Do not read out – pre-coded question using the list below Obsesity Heart disease BSE GM products in food or drinks Additives like colours or preservatives Chemical substances that are formed during heating baking, barbecuing or frying foods Residues in meats like antibiotics or hormones Pollutants like mercury or dioxins Pesticide residues in fruit veg or cereals Food poisoning (eg salmonella, listeria etc) Unhygienic conditions in food handling at home Unhygienic conditions in food handling outside home like in food processing plants, shops or restaurants The welfare of farmed animals High fat content Saturated fat content High sugar content High salt content Nanotechnology Novel foods Food irradiation

2. Do you think about any of these health issues when choosing annd preparing food for yourself? 1 Yes often 2 Yes, sometimes 3 No, not at all a) Heart disease b) Cancer c) Your weight d) Food poisoning e) Healthy teeth f) Other (please tick and describe)
3. For each of the following issues, please tell me if you are very worried, fairly worried, not very worried or not at all worried by it? (this list to be reduced to priority concerns for FSA) BSE GM products in food or drinks Additives like colours or preservatives Contamination by bacteria like salmonella in eggs or listeria in cheese Chemical substances that are formed during heating baking, barbecuing or frying foods Residues in meats like antibiotics or hormones Pollutants like mercury or dioxins Pesticide residues in fruit veg or cereals Unhygienic conditions in food handling at home Unhygienic conditions in food handling outside home like in food processing plants, shops or restaurants Fat content of some foods Saturated fat content of some foods Salt content of some foods Sugar content of some foods Nanotechnology Food irradiation
4. You have indicated (above, q.X) that you are worried about (THE AMOUNT OF FAT YOU CONSUME, THE AMOUNT OF SALT YOU CONSUME, THE AMOUNT OF SUGAR YOU CONSUME), have you done any of the following over the past year; Tried to get more information about (how to change your diet or about salt/sugar/fat in processed foods) Read food labels more carefully Stopped washing raw meat Avoid certain restaurants Changed the products or brands you eat to reduce the fat/salt/sugar you consume Eat less processed food Eat less ‘fast food’ (for example McDonalds, KFC etc – to be cognitively tested) Prepare more food at home using fresh ingredients You are worried about the problem but so far have done nothing about it

What effects do you think eating too much saturated fat can have on your health? PROBE: Which others? MULTI CHOICE **(EXCL NONE AND DK)** DO NOT SHOW SCREEN Makes you unfit Shorter life expectancy “Clogging” of arteries and veins Increases risk of heart disease/attack Affects blood pressure Increases blood pressure Increases risk of a stroke Affects cholesterol Increases cholesterol Stomach cramps Reducing/relieving cramps (e.g. leg cramps) Prevents dehydration Make you thirsty Makes you fat\overweight\obese Lose weight Bad for hair and /or skin Other effect (**SPECIFY**) Don’t know None
It is recommended that we should eat no more than a certain amount of salt each day. How much salt do you think this is for adults? Please give your answer in grams if possible. DO NOT READ OUT. SINGLE CODE ONLY. CODE CAREFULLY TO THE PRE-CODED LIST. Up to 0.5g 0.6-1g 1g 2g 3g etc 10g, 11g-15g, 16g-20g, More than 20g Something else (**SPECIFY**) Don’t know
How much salt do you think this is? DO NOT SHOW SCREEN, SINGLE CODE 1 teaspoon 2 teaspoons 1 tablespoon Other answer **SPECIFY** Don’t know
What effects do you think eating too much salt can have on your health? MULTI CHOICE (**EXCL NONE AND DK**) DO NOT SHOW SCREEN Makes you unfit Shorter life expectancy “Clogging” of arteries and veins

Increases risk of heart disease/attack
Affects blood pressure
Increases blood pressure
Increases risk of a stroke
Affects cholesterol
Increases cholesterol
Stomach cramps
Reducing/relieving cramps (e.g. leg cramps)
Prevents dehydration
Make you thirsty or dehydrated
Makes you fat\overweight\obese
Lose weight
Bad for hair and /or skin
Other effect (**SPECIFY**)
Don't know
None

FSA Q - How do the risks perceived by the general public compare to the actual level of risk as understood by the FSA?

5. I will read out a list of potential risks. For each of them please tell me how likely you think they are to happen to you personally.

(SHOW CARD – ONE ANSWER PER LINE)
(ROTATE – READ OUT) Very likely, Fairly likely, Neither likely nor unlikely, Fairly unlikely, Very unlikely DK

Being the victim of a crime
A serious illness
The food you eat damaging your health
Being injured in a car crash
Environmental pollution damaging your health
Becoming ill from food poisoning
Being harmed by pesticides in food
Becoming ill due to heart disease
Becoming ill due to a stroke
Becoming ill with diabetes
Getting food poisoning from the food I prepare at home (see 4.27 – similar question)
Getting food poisoning from a restaurant or other food outlet (see 4.27 – similar question)

FSA Q. - How do perceptions of risk impact upon behaviour?

How much do you agree or disagree with the following statement – I do not need to make any changes to the food I eat, as it is already healthy enough
SINGLE CODE, SHOW SCREEN

Definitely agree Tend to agree Neither agree nor disagree Tend to disagree Definitely disagree
6. Some people may find it difficult to eat more healthily. Can you tell me please, what do you think would be the difficulties, if any, for you in trying to eat less fat/sugar/salt? (SEPARATE QUESTIONS FOR EACH ITEM) OPEN QUESTION **PROBE: Anything else?**
7. Some people may find it difficult to eat more healthily. Can you tell me please, what do you think would be the difficulties, if any, for you in trying to eat more fruit and vegetables Open question PROBE: Anything else?

Thinking about the last 6months, that is between (INSERT NAME OF MONTH 6 MONTHS AGO) **and now, what, if any, changes have you personally made to the food you eat over the last 6 months?** SHOW SHOWCARD C CODE ALL THAT APPLY **RANDOMISE LIST** A Eating more bread, rice, potatoes, pasta and other starchy foods B Eating less bread, rice, potatoes, pasta and other starchy foods C Eating more fruit and vegetables D Eating more fish, including oily fish E Eating less food high in saturated fat F Eating less food high in fat in general G Eating less meat H Eating less salt, for example eating less salty food, not adding salt during cooking or to a meal before eating I Eating fewer calories J Eating more calories K Eating larger portions L Eating smaller portions M None of these
Why have you made this/these change/s to the food you eat in the last 6 months? **PROBE: Anything else?** **OPEN QUESTION**
FSA Q. - Will individuals take some risks but not others? (Is there a hierarchy of risk?) FSA Q. - What risks are people prepared to take? (long term health) **At the moment, how often do you eat INSERT FOOD?** SHOW SCREEN, SINGLE CODE **SCALE** Add – More than 4 times a day 3-4 times a day 2 times a day once a day 5-6 times a week 3-4 times a week Once or twice a week Once a fortnight Once a month Less than once a month Never DK **CODE NOT SHOWN**

FOODS – RANDOMISE LIST – FIX ORDER OF TWO FISH ITEMS
Processed meat like sausages, ham or tinned meat
Milk and dairy foods like cheese and yoghurt
Biscuits, pastries and cakes
Bread, rice, pasta, potatoes and other starchy foods
Fried chips or roast potatoes
Oily fish, like salmon, sardines, mackerel or fresh tuna
Other fish like cod, haddock, plaice or tinned tuna
Beef, lamb or pork
Fruit and vegetables
Microwave meals and oven ready foods
Add (given that this section concerned with risky foods –
Chocolate
Crisps
'Fast food' takeaways eg. kebabs, McDonalds, KFC, Burger King – others

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FSA Q. - What risks are people prepared to take? (short term health/safety)

8. What is the maximum time after the <<INSERT>> that you would <<INSERT>> ?
NOTE FOR INTERVIEWERS – IF RESPONDENT STATES THAT THEY USE THINGS WHICH ARE PAST THEIR USE BY DATES BECAUSE THEY ARE FROZEN PLEASE PROMPT WITH "IMAGINE THEY WERE FRESH"
use raw meat (i.e. cook then eat) (Use by)
Eat cooked meat (Use by)
Eat dairy (Use by)
Eat eggs (Best before end)
Eat bread (Best before end)
Eat breakfast cereal (Best before end)
Never
Less than 1 day
1 day and up to 3 days
3 days and up to 5 days
5 days and up to 7 days
1 week but less than 2 weeks
2 weeks or more
(Depends)
(Don't eat)

---

9. Do you ever freeze the following foods after their 'use-by' date?
Yes, often
Yes, sometimes
No

Beef/steak/mince
Chicken – raw / cooked
Fish

4.23 Do you follow storage information provided on products?   SINGLE CODE, SHOW SCREEN **Yes, always** **Yes, depending on the food type** **Sometimes** **Never** **When I have bought a food for the first time** **Never noticed storage information on products** **DK (CODE NOT SHOWN)**
10. Once you have opened the following foods do you check how many days the food must be eaten within and stick to that advice? Yes always Sometimes Never It depends Pate Sliced ham Sliced cheese Bacon Insert food groups of interest
4.1 Thinking about when you are storing, preparing and cooking food, I would like you to tell me whether you do the following things at all when you are in the kitchen and if so how frequently: **Long list here relating to food safety practices**
SECTION II - GOVERNMENT CAMPAIGNS **FSA Q. - Does the public understand food safety risk messages?** **FSA Q. - Does the public act upon food safety risk messages?** **11. Please tell me how recently you have heard or seen something in the media(Define: TV shows or adverts, radio, magazines, papers, online) about the following health risks. (This week, in past month, In past 6 months, More than 6 months ago, never)** Obesity / eating too much / exercising too little Too much salt being unsafe or bad for your health Too much unsaturated fat being bad for your health Food poisoning
12. Please tell me how you reacted to the last story you heard about obesity/salt/fat/food poisoning.

I didn't really understand the message, it wasn't clear
You have permanently changed your eating habits
You avoided the food mentioned in the story but only for a while
You got worried about the problem but finally you did nothing about it
You have ignored the story
Changed the way you prepare food
Changed the way you cook food
Other (SPONTANEOUS)

13. Where do you usually get information about how to prepare food safely? (SPONTANEOUS)
I just know
From my parents
Taught at school
From TV / radio campaigns
From books
Online information
Follow instructions on product packaging
I don't bother

SECTION III - ATTITUDES/TRUST TOWARD AND KNOWLEDGE OF FOOD CONTROLS

FSA Q. - Are people aware of controls which exist to protect the safety of food?

14. Which of the following have you heard of? (tick all that apply)
Meat hygiene service
Food standards agency
Chemicals Regulation Directorate
Department for Environment, Food and Rural Affairs (Defra)
Agriculture/Rural Affairs Departments
Codex Alimentarius Commission
Environmental health officers
Trading standards officers

FSA Q. - Do they trust these controls?

FOOD CHOICES MODULE

SECTION I – INFLUENTIAL FACTORS
FSA Q. - Which factors influence food choices?

1. When thinking about food, what words first come to mind?
Do not read out. Spontaneous, pre-coded use list below

Pleasure
Conviviality
Taste
Guilt
Greed
Necessity
Health
Hunger
Obesity
Diet/Balanced diet
Calories
Chemicals
Local or national culture
Diseases
Other (SPONTANEOUS)

7.1 Which, if any, of the following applies to you? Please state all that apply.
RANDOMISE ORDER, BUT ALWAYS KEEP VEGETARIAN STATEMENTS TOGETHER.
SHOW SCREEN
MULTICODE

Completely vegetarian
Partly vegetarian
Vegan
Allergic to certain food
On a diet trying to lose weight
Avoid certain food for religious or cultural reasons
Avoid certain food for medical reasons
Other (**SPECIFY**)
None

2. How important are the following when you choose what to eat? (Very important, fairly important, not very important, unimportant)

1 Quality or freshness of food
2 Taste of food
3 Eating food that is healthy
Eating food that is low in fat

Eating food that is low in salt Eating low sugar foods 5 Vegetarian or other special eating habits 6 Number of additives or E numbers in food 7 Tradition/culture 9 What my family / spouse / children will eat 10 Convenience in preparation 14 Price of food / value for money / special offers 15 Whether food is organically produced 16 Animal welfare / free range 17 Impact on the community where food comes from / fair trade / supporting local farms and industries 18. Is environmentally friendly / Food miles / sustainability (eg fish stocks)
3. How much do you agree or disagree with each of these statements… 1 Strongly agree 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Strongly disagree 0 Don't know a. I like food to be unprocessed, even if this means that it takes more effort to prepare and keep fresh? b. I eat some foods which are healthy for me even though I don't much like the taste c. I would buy more fresh fruit and vegetables if they cost less
FSA Q. - Do individuals prioritise between potentially conflicting choices and how are trade-offs reached? **You may have heard of genetically modified foods or 'GM' foods. These are made from plants which have had their genes altered. Some people say that growing these plants may damage other plants and wildlife and that food made from them may not be safe to eat. Other people say that growing these plants may mean lower food prices and less use of pesticides and weedkillers. Please say how much you agree or disagree with each of these statements about GM foods.** **a. In order to compete with the rest of the world, Britain should grow GM foods** 1 - Agree strongly 2 - Agree 3 - Neither agree nor disagree

4 - Disagree
5 - Disagree strongly
8 - Can't choose

b. GM foods should be banned even if food prices suffer as a result
1 - Agree strongly
2 - Agree
3 - Neither agree nor disagree
4 - Disagree
5 - Disagree strongly
8 - Can't choose

Imagine a sausage that helps reduce the risk of high blood pressure, which tastes the same and looks the same as normal sausages sold in the supermarket. It would be available in meat and vegetarian varieties. The sausage could be produced by adding ingredients which have been medically proven to reduce the risk of high blood pressure. Please say whether

a. …you would buy the sausage that helps reduce the risk of blood pressure rather than a traditional sausage?
1 Definitely would
2 Probably would
3 Probably would not
4 Definitely would not
0 (Don't know)

(If not "definitely would not" at "a")
And please say whether you would buy the sausage that helps reduce the risk of high blood pressure if

b …it was more expensive than a traditional sausage?
1 Definitely would
2 Probably would
3 Probably would not
4 Definitely would not
0 (Don't know)

c …it had a shorter shelf-life than a traditional sausage?
1 Definitely would
2 Probably would
3 Probably would not
4 Definitely would not
0 (Don't know)

Imagine an extremely low calorie cake. It tastes the same and looks the same as conventional cake sold in the supermarket but has had an extra ingredient added to reduce the number of calories it contains. Please say whether…

a. …you would buy the extremely low calorie cake rather than traditional cake?
1 Definitely would
2 Probably would
3 Probably would not
4 Definitely would not
0 (Don't know)

(If not "definitely would not" at "a") And please say whether you would buy the extremely low calorie cake if…
b … it was more expensive than traditional cake?
1 Definitely would
2 Probably would
3 Probably would not
4 Definitely would not
0 (Don't know)

c … it had a shorter shelf-life than traditional cake?
1 Definitely would
2 Probably would
3 Probably would not
4 Definitely would not
0 (Don't know)

SECTION II – OBSTACLES TO HEALTHY EATING

5. Do you find the price of fresh fruit and vegetables:
1 cheap
2 reasonable
3 expensive

6. Here are some things which might discourage people from eating more healthy foods. Which do you think PREVENT you from eating more healthy foods? (2003-05)
1 - Family discouraging or unsupportive
2 - Friends discouraging or unsupportive
3 - People at work discouraging or unsupportive
4 - Not knowing what changes to make
5 - Not knowing how to cook more healthy foods
6 - Poor choice of healthy foods in canteens and restaurants
7 - Poor choice of healthy foods in places where you shop
8 - Healthy foods are too expensive
9 - Healthy foods take too long to prepare
0 - Healthy foods too boring
1 - Lack of will-power / motivation
2 - Don't like the taste/ don't enjoy healthy foods

Y - Don't Know
X - None of these
0 – Other
No changes needed

7. Here are some reasons why people don't always have the quality or variety of food they want. Can you tell me if any of these are reasons why you do not always have the kinds of food you want to eat.

1 Not enough money
2 Not enough time for shopping
3 Not enough time for cooking
4 Not available in local shops
5 Not available at work
6 It's too hard to get to the shops (health problems)
7 It's too hard to get to the shops (lack of transport)
8 It's too hard to get to the shops with the children
9 The shops I can afford to go to don't sell a wide variety of foods
10 The shops I can afford to go to don't sell good quality foods
11 These kinds of foods get eaten too quickly
12 Lack of cooking facilities
13 Lack of storage facilities
14 Difficulty preparing or cooking meals
15 Not knowing how to cook different foods/meals
16 No particular reason
Add – my job/work shifts/ work evenings

8. Out of those you have chosen, which would you say is the most important reason? Repeated for 2nd and 3rd reasons)

SECTION III - CHANGE IN DIET QUESTIONS

Thinking about the last 6months, that is between (INSERT NAME OF MONTH 6 MONTHS AGO) **and now, what, if any, changes have you personally made to the food you eat over the last 6 months?**
SHOW SHOWCARD C
CODE ALL THAT APPLY
RANDOMISE LIST

A Eating more bread, rice, potatoes, pasta and other starchy foods
B Eating less bread, rice, potatoes, pasta and other starchy foods
C Eating more fruit and vegetables
D Eating more fish, including oily fish
E Eating less food high in saturated fat
F Eating less food high in fat in general
G Eating less meat

H Eating less salt, for example eating less salty food, not adding salt during cooking or to a meal before eating
I Eating fewer calories
J Eating more calories
K Eating larger portions
L Eating smaller portions
M None of these

Why have you made this/these change/s to the food you eat in the last 6 months? PROBE: Anything else?

(AS MANY AS APPLY)
Illness
Difficulty walking
Acquired a household car/van
Loss of household car/van
Less money to spend
Lost job
More money to spend
Got married/new (live in) partner
Separated from husband/partner
New baby
Kid(s) moved out
On a diet
To improve diet/eat more healthily
Medical reasons
Other reasons

FSA Q. - Do factors change over time? (i.e. an ageing effect)

9. Thinking back over (the last 10 years?), has your overall diet changed at all as you have got older?
Yes, a lot
Yes, a little
No
Not sure

If yes
10. In what way has it changed? (open, spontaneous...)

FSA Q. - What or who influences food choices and changed behaviour to the greatest extent

11. When you are choosing food to eat yourself, how much do the

following influence your choice?

1 A lot
2 Quite a bit
3 A little
4 Not at all

a) Cost
b) What your children prefer to eat
c) What you prefer to eat
d) What other people prefer to eat (e.g. partner, other adult)
e) Convenience of preparation
f) What is good (healthy) to eat
g) The special offers available when shopping
h) Adverts/programmes on the television/radio
i) Articles about food and recipes in newspapers/ magazines

Add
k) The food I ate when growing up
l) Health information in the media
m) Health information from doctor/nurse/nutritionist
n) Government campaigns
0) Concern with weight/appearance
p) my cooking skills
q) ability to store food

SECTION IV – ROLE OF GOVERNMENT

FSA Q. - What is the perceived ideal role for government in relation to specific issues relating to food choices

12. For each of the following statements, would you say that you totally agree, tend to agree, tend to disagree, totally disagree

a) The government should use media campaigns to inform people about safe food preparation

b) The government should use media campaigns to inform people about healthy diets (e.g. unsaturated fat or too much salt in food)

c) The government should limit the number of catering outlets selling unhealthy food in high streets

d) The government should regulate nutritional labelling on food

(need cognitive testing of 'nutritional labelling')

e) Government legislation should be used to limit the amount of salt or unsaturated fats in some foods